Can science explain everything?

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Preface

This book has been written in response to many young people and adults who have asked for an introduction to the "Science and God debate" that would be more accessible than my book *God's Undertaker: Has Science Buried God?* In addition, many of them asked me to deal more specifically with the relationship between Christianity and science as distinct from restricting myself to evidence for the existence of God. I hope they will find this little book goes some way to meeting their requests.

John C. Lennox
Oxford, April 2018

Introduction: Cosmic chemistry

Make a search on the subject of science and religion, and it will take only a few clicks to convince you that you have stepped into a war zone.

In comment threads on almost every conceivable subject in science—from bioethics and psychology to geology and cosmology—you will find hostile exchanges and name calling from two sides which you are convinced would never meet across a negotiating table—even if the United Nations called a ceasefire.

There is what we might call, for convenience, the “science side”. They view themselves as the voice of reason. They believe they are working to roll back the tide of ignorance and superstition that has enslaved mankind since we crawled out of the primeval slime. If I can summarise their position, it is this:

> *Science is an unstoppable force for human development that will deliver answers to our many questions about the universe, and solve many, if not all, of our human problems: disease, energy, pollution, poverty. At some stage in the future, science will be able to explain everything, and answer all our needs.*

They may also be assuming that, at some stage in the future, science will provide the answers to at least some of our big questions in life: Where do we come from? What are we here for? What is the meaning of our existence?

At the other extreme, there is what we might for convenience call the "God side". They hold that a divine intelligence is behind everything there is and everything we are. They are looking for, and even claim to have found, the answers to the same big questions that scientists ask, but in a very different place. They look to the complexity and wonder of the universe and our astonishingly rich and diverse blue planet, and find it to be self-evident that there is a wonderful mind behind our beautiful and amazing world. They seem surprised that there could be people who do not see things this way.

Sometimes the result is fighting and name-calling in intemperate encounters that generate more heat than light.

It is therefore not surprising that many people conclude that *God and science do not mix*; like when you drop metallic sodium or potassium onto water, there is a lot of fizzing and fire and heat ending with a loud bang.

But what if there were another way of looking at this whole business? What if we have been fooled into a pointless war based on misinformation and wrong thinking? It would not be the first time. What if there were a different kind of cosmic chemistry to the one that ends with an explosion?

WHERE I AM COMING FROM

Geographically, I come from Northern Ireland, which is a place that sadly has a dubious reputation when it comes to "the God question". I grew up in a country that was riven by a deep sectarian and cultural divide, popularly represented as a battle between "Protestants" and "Catholics" (although, of course, it was much more complicated than that). It led to three decades of brutal murder, bombings and terrorism collectively known as "the Troubles".

In the middle of all this my parents were remarkable people. They were Christians, yes, but they were not sectarian—a difficult stance for anyone

in those days. My father showed that lack of sectarianism by employing people in his store from across the religious divide. It was bombed for that, and my brother was seriously injured in the blast. Terrorism hit our home in a very real way.

I owe my parents a lot, but perhaps the biggest thing was that they loved me enough to give me space to think for myself; not a common thing in my country, I regret to admit, as there was much bigotry and entrenched opinion. I was also grateful that when I arrived at Cambridge University in the autumn of 1962, I had already been encouraged by my parents to read widely and to think deeply about worldviews other than Christianity.

Subsequently, I have been privileged to talk about these issues and debate the relevant arguments in public for the last 20 years with leading atheists, of whom the world leader is probably still Richard Dawkins, who, like myself, is a professor at Oxford University. I have always tried to treat people with different worldviews from my own with respect, and to find out how they arrived at their position, and why they feel so passionately about it.

It may be that you are reading this, and you feel strongly that science is sufficient to explain everything, and that there is no place for God in the world any more. Or it may be that you are just curious and want to get some perspective on this question. Whoever you are, I hope you enjoy reading this introduction to the question, and that it stimulates you to approach this question in a scientific way: that is, open to what the outcome may be, and prepared to follow the evidence where it leads, even if that may turn out to be uncomfortable for you in some way.

I want to suggest that the popular idea that science and God do not mix is simply not true, and that it is relatively easy to establish that. In this short book, I want to examine many of the misconceptions people have, not just about faith and belief in God but about science itself. In doing so, I want to show that there is a different way of looking at things that is more rational,

more sensible, *and* more wholesome than the all too familiar alleged conflict between science and religion.

I want to suggest that a different kind of cosmic chemistry is possible: that there is a different kind of reaction between science and religion that is truer to the spirit and essence of both, and more fruitful than the tired and entrenched debate that we see played out all around us.

Hydrogen and oxygen, like potassium and water, also form an explosive mixture, but the end result could not be more different—refreshing, life-giving water.

1. Can you be a scientist and believe in God?

“Surely you can’t be a scientist and believe in God these days?”

It’s a viewpoint I have heard expressed by many people over the years. But I suspect that it is often the unspoken doubt that stops many from engaging seriously with serious thinkers about both science and God.

In reply, I like to ask a very scientific question: “Why not?”

“Well,” the answer comes back, “science has given us such marvelous explanations of the universe and demonstrates that God is just not necessary. Belief in God is old fashioned. It belongs to the days when people didn’t really understand the universe, and just took the lazy way out and said that ‘God did it’. That sort of ‘God of the gaps thinking’ simply won’t do any more. Indeed, the sooner we get rid of God and religion, the better.”

I sigh inwardly, and prepare myself for a long conversation in which I try to untangle the many assumptions, misunderstandings and half-truths that have been absorbed uncritically from the cultural soup we swim in.

A COMMON VIEWPOINT

It’s not surprising that this viewpoint is so common that it has become the default position for many, if not most; it’s a viewpoint supported by some powerful voices. Stephen Weinberg, for example, a Physics Nobel Prize winner said,

> *The world needs to wake up from the long nightmare of religion. Anything we scientists can do to weaken the hold of religion should be done, and may in fact be our greatest contribution to civilisation. [1].*

I hope you didn’t miss the rather sinister-sounding totalitarian element in this statement: “*anything* we scientists can do…”

This attitude is not new. I first met it fifty years ago while studying at Cambridge University. I found myself at a formal college dinner sitting beside another Nobel Prize winner. I had never met a scientist of such distinction before and, in order to gain the most from the conversation, I tried to ask him some questions. For instance, how did his science shape his worldview—his big picture of the status and meaning of the universe? In particular, I was interested in whether his wide-ranging studies had led him to reflect on the existence of God.

It was clear that he was not comfortable with that question, and I immediately backed off. However, at the end of the meal, he invited me to come to his study. He had also invited two or three other senior academics but no other students. I was invited to sit, and, so far as I recall, they remained standing.

He said, “Lennox, do you want a career in science?”

“Yes, sir,” I replied.

“Then,” he said, “in front of witnesses, tonight, you must give up this childish faith in God. If you do not, then it will cripple you intellectually

and you will suffer by comparison with your peers. You simply will not make it."

Talk about pressure! I had never experienced anything like it before.

I sat in the chair paralysed and shocked by the effrontery and unexpectedness of the onslaught. I didn't really know what to say, but eventually I managed to blurt out, "Sir, what have you got to offer me that is better than what I have got?" In response, he offered me the concept of "Creative Evolution" put forward in 1907 by French philosopher Henri Bergson.

In fact, thanks to C.S. Lewis, I knew a little about Bergson and replied that I could not see how Bergson's philosophy was enough to base an entire worldview upon and provide a foundation for meaning, morality and life. With a shaking voice, and as respectfully as I could, I told the group standing around me that I found the biblical worldview vastly more enriching and the evidence for its truth compelling, and so, with all due respect, I would take the risk and stick with it.[2]

It was a remarkable situation. Here was a brilliant scientist trying to bully me into giving up Christianity. I have thought many times since that, if it had been the other way around, and I had been an atheist in the chair surrounded by Christian academics pressuring me to give up my atheism, it would have caused reverberations around the university, and probably have ended with disciplinary proceedings against the professors involved.

But that rather scary incident put steel into my heart and mind. I resolved to do my best to be as good a scientist as I could and, if ever I had the opportunity, to encourage people to think about the big questions of God and science and make up their own minds without being bullied or pressured. It has been my privilege in the years that have followed to engage thoughtfully with many people, both young and old, in a spirit of friendship and open enquiry on these questions. What follows in this book are some of the thoughts and ideas that I have found most helpful to share

with people, and some of the most interesting and unusual conversations I have had.

THE DARK SIDE OF ACADEMIA

I learned another valuable lesson that day: about the existence of a dark side to academia. There are some scientists who set out with preconceived ideas, do not really wish to discuss evidence, and appear to be fixated not on the pursuit of truth but on propagating the notions that science and God do not mix and that those who believe in God are simply ignorant.

This is simply not true.

What's more, you don't need to have a great deal of insight to see that it is false. Think of the Nobel Prize in Physics, for example. It was won in 2013 by Peter Higgs, a Scotsman who is an atheist, for his ground-breaking work on subatomic particles, and his prediction, later proved, of the existence of the Higgs boson. Some years before that, it was won by William Phillips, an American who is a Christian.

If science and God do not mix, there would be no Christian Nobel Prize winners. In fact, between 1901 and 2000 over 60% of Nobel Laureates were Christians.[3] I want to suggest that what divides Professors Higgs and Phillips is not their physics or their standing as scientists—they've both won the Nobel Prize. What divides them is their *worldview*. Higgs is an atheist and Phillips is a Christian. It follows that the claim of those academics who tried to intimidate me in Cambridge so many years ago—that if you wish to be scientifically respectable you have to be an atheist—is obviously false. There cannot be an essential conflict between being a scientist and having faith in God.

However, there is a very real conflict between the worldviews held by these two brilliant men: atheism and theism.

WHAT EXACTLY IS ATHEISM?

Strictly speaking, atheism simply means lack of belief in God. However, that does not mean that atheists do not have a worldview. You cannot deny the existence of God without asserting a whole raft of beliefs about the nature of the world. That is why Richard Dawkins' book *The God Delusion* is not just a one-page tract stating that he doesn't believe in God. It is a lengthy volume dedicated to his atheistic worldview, naturalism, which holds that this universe/multiverse is all that exists, that what scientists call "mass-energy" is the fundamental stuff of the universe, and that there is nothing else.

Physicist Sean Carroll, in his best-selling book *The Big Picture*, explains how naturalism views humans:

> *We humans are blobs of organized mud, which through the impersonal workings of nature's patterns have developed the capacity to contemplate and cherish and engage with the intimidating complexity of the world around us ... The meaning we find in life is not transcendent…[4]*

This is the worldview in which many atheists put their faith.

My worldview is Christian theism. I believe that there is an intelligent God who created, ordered and upholds the universe. He made human beings in his image, meaning that they have been endowed with the capacity not only to understand the universe around them but also to get to know and to enjoy fellowship with God himself. For Christians, life has a gloriously transcendent meaning. I would like to show you that science, far from undermining this view, strongly supports it. We shall see later, however, that it is *atheism* to which science gives little support. But before that, I'd like to prepare the ground by giving some historical context for how we arrived at this strange position of thinking that science and God do not mix.

LESSONS FROM HISTORY

I have always had a facility with languages—mathematics and languages often go together. Indeed, when I was a poor, struggling junior academic in Cardiff, I took the opportunity to earn a little extra money for my growing family by translating research papers in mathematics from Russian to English.

By a curious train of events, I found myself a few years later on a rickety Russian plane landing at the city of Novosibirsk in Siberia to spend a month lecturing and researching at the university there.

However backward the technological infrastructure was in those days of communist rule, some of Russia's mathematicians were world leaders, and it was a privilege to meet with them and spend time with the faculty and students. But they were utterly perplexed by one thing: that I believed in God!

I was eventually invited by the rector of the university to explain in a lecture why I, as a mathematician, believed in God. Apparently, it was the first lecture on this kind of issue to be held there in 75 years. The auditorium was full to capacity with many professors as well as students. In my presentation, among other things, I spoke about the history of modern science and related how its great pioneers—Galileo, Kepler, Pascal, Boyle, Newton, Faraday and Clerk- Maxwell—were all firm and convinced believers in God.

When I said this, I detected anger in the audience and, not liking people being angry in my lectures, I paused to ask them why they were so annoyed. A professor in the front row said, "We are angry because this is the first time we have heard that these famous scientists on whose shoulders we stand were believers in God. Why were we not told this?" "Is it not obvious," I replied, "that this historical fact did not fit with the 'scientific atheism' that you were taught?"

I went on to point out that the connection between the biblical worldview and the rise of modern science was well recognised. Eminent Australian ancient historian Edwin Judge writes:

> *The modern world is the product of a revolution in scientific method … Both experiment in science, and the citing of sources as evidence in history, arise from the worldview of Jerusalem, not Athens, from Jews and Christians, not the Greeks.[5]*

C.S. Lewis sums it up well when he says, "Men became scientific because they expected Law in Nature, and they expected Law in Nature because they believed in a Legislator."[6]

Recent historians of science, like Peter Harrison, are more nuanced in their formulation of the way in which Christian thought influenced the intellectual landscape in which modern science arose, but they reach the same basic conclusion: far from hindering the rise of modern science, *faith in God was one of the motors that drove it.* I therefore regard it as a privilege and an honour, not an embarrassment, to be both a scientist and a Christian.

Here are some examples of the convictions of the greatest scientists. Johannes Kepler (1571-1630), who discovered the laws of planetary motion, wrote:

> *The chief aim of all investigations of the external world should be to discover the rational order which has been imposed on it by God and which he revealed to us in the language of mathematics.*

This was no expression of mere deism since Kepler elsewhere revealed the depth of his Christian convictions: "I believe only and alone in the service of Jesus Christ. In him is all refuge and solace".

Michael Faraday (1791-1867), arguably the greatest ever experimental scientist, was a man of profound Christian conviction. As he lay on his

deathbed, he was asked by a visiting friend, “Sir Michael, what speculations have you now?” For a man who had spent his life making speculations about a vast array of scientific subjects, discarding some and establishing others, his response was robust: “Speculations, man, I have none! I have certainties. I thank God that I do not rest my dying head upon speculations for I know whom I have believed and am persuaded that he is able to keep that which I have committed to him against that day.”

As he faced eternity, Faraday had the certainty that upheld the apostle Paul centuries before him.

GALILEO

“But wasn’t Galileo persecuted by the church?” asked another member of my Siberian audience. “Surely that shows there is no concord between science and faith in God.”

In my reply, I pointed out that Galileo was actually a firm believer in God and the Bible and remained so all of his life. He once said that “the laws of nature are written by the hand of God in the language of mathematics” and that the “human mind is a work of God and one of the most excellent”.

Furthermore, the popular, simplistic version of this story has been massaged to support an atheist worldview. In reality, Galileo initially enjoyed a great deal of support from religious people. The astronomers of the powerful Jesuit educational institution, the Collegio Romano, initially endorsed his astronomical work and fêted him for it. However, he was vigorously opposed by secular philosophers who were enraged at his criticism of Aristotle.

This was bound to cause trouble; however, let me emphasise, not at first with the church. In his famous “Letter to the Grand Duchess Christina” (1615), Galileo claimed that it was the academic professors who were so opposed to him that were trying to influence the church authorities to speak

out against him. The issue at stake for the academics was clear: Galileo's scientific arguments were threatening the all-pervading Aristotelianism of the academy.

In the spirit of developing modern science, Galileo wanted to decide theories of the universe on the basis of *evidence*, not on arguments based on an appeal to *the current ruling theories* in general and the authority of Aristotle in particular. Galileo looked at the universe through his telescope, and what he saw left some of Aristotle's major astronomical speculations in tatters. Galileo observed sunspots, which blemished the face of what Aristotle taught was a "perfect sun". In 1604 Galileo saw a supernova, which called into question Aristotle's view that the heavens were unchanging—"immutable".

Aristotelianism was the reigning worldview at the time and formed the paradigm in which science was done, but it was a worldview in which cracks were already beginning to appear. Furthermore, the Protestant Reformation was challenging the authority of Rome and so, from Rome's perspective, religious security was under increasing threat. The embattled Roman Catholic Church, which had, in common with almost everyone else at the time, embraced the Aristotelian view of the world, felt itself unable to allow any serious challenge to Aristotle, although there were rumblings (particularly among the Jesuits) that the Bible itself did not always support Aristotle's view of things.

But those rumblings were not yet strong enough to prevent the powerful opposition to Galileo that would arise from both the academy and the Roman Catholic Church. But, even then, the reasons for that opposition were not merely intellectual and political. Jealousy and also, it must be said, Galileo's own lack of diplomatic skill, were contributing factors. For instance, he irritated the elite of his day by publishing in Italian and not in Latin, in order to give some intellectual empowerment to ordinary people. He was commendably committed to what is now called the public understanding of science.

Galileo also developed an unhelpfully short-sighted habit of denouncing in vitriolic terms those who disagreed with him. Neither did he promote his cause by the way in which he handled an official directive to include in his *Dialogue Concerning the Two Principal Systems of the World* the argument of his erstwhile friend and supporter Pope Urban VIII—Maffeo Barberini. The Pope argued that since God was omnipotent, he could produce any given natural phenomenon in many different ways, and so it would be presumption on the part of the natural philosophers to claim that they had found the unique solution. Galileo dutifully included this argument in his book, but he did so by putting it into the mouth of a dull-witted character he called Simplicio ("buffoon"). We might see this as a classic case of shooting oneself in the foot.

There is, of course, no excuse whatsoever for the Roman Catholic Church's use of the power of the Inquisition to muzzle Galileo, nor for subsequently taking several centuries to rehabilitate him. It should also be noted that, again contrary to popular belief, Galileo was *never* tortured; and his subsequent house arrest was spent, for the most part, enjoying the hospitality of luxurious private residences belonging to friends.

CHALLENGING THE WORLDVIEW

The main lesson to be drawn is that it was Galileo, a believer in the biblical worldview, who was advancing a better *scientific* understanding of the universe, not only, as we have seen, in opposition to some churchmen but against the resistance and obscurantism of the secular philosophers of his time who, like the churchmen, were also convinced disciples of Aristotle.

Philosophers and scientists today also have need of humility in light of the facts, even if those facts are being pointed out to them by a believer in God. Lack of belief in God is no more a guarantee of scientific orthodoxy than is belief in God. What is clear, both in Galileo's time and ours, is that criticism of a reigning scientific paradigm is fraught with risk, no matter

who is engaged in it—a point that was not lost on my audience of Russian academics living under a totalitarian regime.

Commenting on the Galileo affair (and that other much misrepresented iconic event, the debate between Samuel Wilberforce and T. H. Huxley in Oxford in 1860), historian of science Colin Russell concludes:

> *The common belief that ... the actual relations between religion and science over the last few centuries have been marked by deep and enduring hostility ... is not only historically inaccurate but actually a caricature so grotesque that what needs to be explained is how it could possibly have achieved any degree of respectability.*[7]

2. How did we get here: from Newton to Hawking

Perhaps the most celebrated scientist of modern times was Stephen Hawking, who held the Lucasian Chair of Mathematics at Cambridge University, the same chair that Sir Isaac Newton held 300 years before. Newton was a firm and passionate believer in God and saw no conflict between his faith and the pursuit of science; Hawking declared himself to be an atheist and said that we have to choose between science and God.

How did that happen? How did we get from Newton's belief in God to Hawking's unbelief? Was it simply the advance in science? Or something else?

There are two things to think about—both of which are obvious but are often missed.

STATEMENTS BY SCIENTISTS AND SCIENTIFIC STATEMENTS

At the beginning of his famous TV series, *Cosmos*, the American astronomer and cosmologist Carl Sagan said, "The cosmos is all that is, or ever was, or ever will be". That is not a statement of science, to be put in the same category as, for example, the scientific statement that gravity obeys an inverse-square law. Sagan's statement is simply an expression of

his atheistic belief. The problem is, many people give to all statements by scientists the authority rightly due to science, simply because they are stated by a scientist.

That is risky, for scientists—even brilliant scientists—can get things badly wrong. The Nobel prize-winning physicist Richard Feynman said that outside his or her field, the scientist is just as dumb as the next guy. A rather blatant example of this error is given by Stephen Hawking in his book, *The Grand Design*. There he says that "philosophy is dead … Scientists have become the bearers of the torch of discovery in our quest for knowledge".[8] I thought it rather unwise to say philosophy is dead at the beginning of a book whose main topic is the philosophy of science!

IS SCIENCE THE ONLY WAY TO TRUTH?

It is also wrong to suggest that science is *the only way to truth*. That idea, which is widespread today, is a belief called "scientism".

Think about it: if science were the only way to truth, you would have to get rid of half the faculties in any school or university—history, literature, languages, art and music, for a start.

Einstein once said that scientists make poor philosophers. I am sorry to have to say that Hawking, brilliant scientist though he was, certainly demonstrated that weakness. The British Astronomer Royal, Baron Rees of Ludlow, who was a friend of Stephen Hawking, was asked by the *Guardian* newspaper what he thought of Hawking's pronouncement that the creation of the universe did not require a God. Rees replied, "I know Stephen Hawking well enough to know that he has read little philosophy and less theology, so I don't think his views should be taken with any special weight."[9] He made the same point in Hawking's obituary.

Unfortunately, the idea that science is the only way to truth often leads people to think that "scientific" means the same as "rational," that is, in

accord with reason. This is false, and obviously so, for, all of the disciplines mentioned above—history, literature, and so on—require the use of reason, as do most things in life. Reason has a far larger scope than science.

An illustration will reinforce the limitations of science. Imagine that my Aunt Matilda has baked a cake, and we submit it for analysis to a group of the world's top scientists. The biochemists will inform us about the structure of the proteins, fats, and so on involved in its composition; the chemists, about the elements involved; the physicists will be able to analyse the cake in terms of fundamental particles; and the mathematicians will, no doubt, offer us a set of elegant equations to describe the behaviour of those particles.

Now we know *how* the cake was made and *what* it is made of, but suppose we now ask the scientists *why* the cake was made? The grin on Aunt Matilda's face shows that *she* knows the answer, for she made the cake. But it is surely self-evident that the best scientists in the world will not be able to tell us from their investigations why she made it. Unless she reveals the answer, they will never know. The natural sciences can cope with questions about the nature and structure of the cake, but they cannot answer the "why" question of purpose.[10] Science has its limitations.

Nobel Prize winner Sir Peter Medawar points out that the existence of a limit to science is very likely because of its inability to answer childlike elementary questions:

> *I have in mind such questions as: "How did everything begin?" "What are we all here for?" "What is the point of living?"[11]*

There are three common and related arguments that are often brought out against belief in God which sound scientific, rational and logical but are actually nothing of the kind.

BELIEF IN GOD IS A DELUSION

This is the argument put forward in Richard Dawkins' book *The God Delusion*. And more than that, he argues that it is a delusion that is dangerous and harmful to people's lives.

"Delusion" is a concept taken from psychiatry. It means a persistent false belief held in the face of strong contrary evidence. I want to spin this claim around and suggest that it is actually Dawkins' atheism that fits this definition better.

Since Dawkins is not a psychiatrist, his claim that God is a delusion is outside the realm of his primary expertise. As a scientist, he would have been well advised to check what the experts in that field had to say. Since I am not a psychiatrist either, I did some research to see if the experts supported what Dawkins claimed.

I found that they did not.

Professor Andrew Sims, a past president of the Royal Society of Psychiatrists, writes, "The advantageous effect of religious belief and spirituality is one of the best kept secrets in psychiatry and medicine generally".[12] If the findings of the huge volume of research on this topic had gone in the opposite direction and it had been found that religion damages your mental health, it would have been on the front page of every newspaper in the land.

Furthermore, Sims tells us that a major survey in the *American Journal of Public Health* points out that in the majority of studies of this field, religious involvement correlates strongly with wellbeing, happiness, life satisfaction, hope and optimism, purpose and meaning in life, higher self-esteem, better adaptation to bereavement, greater social support, less loneliness, lower rates of depression, and faster rates of recovery from depression, to mention just a few. But we read Dawkins in vain to find any awareness of this huge volume of research.

It looks as if it is Dawkins who may be deluding us. He claims to use science to make his point, but he is clearly unaware that the science does not support him, because he has not given careful enough attention to what it says. He has failed to do the research.

So much for the "harm" that belief in God does. We will come in later chapters to the evidence for the reality of God, where I will suggest that it is atheism that is a delusion, since it is a persistent belief held in the face of strong contrary evidence.

FREUD'S OBJECTION

You may be aware that the person most associated with the idea that God is a delusion is Sigmund Freud. In his bestselling book *God: A Brief History of the Greatest One*,[13] German psychiatrist Manfred Lütz points out that Freud's explanation for belief in God works very well *provided only that God does not exist*. However, he continues, by the very same token, *if God does exist*, then exactly the same Freudian argument will show you that it is atheism that is the comforting delusion, the flight from facing reality, a projection of the desire not to have to meet God one day and give an account for your life.

Marxism adopted this Freudian view that religion was the opium of the people. But those who experienced the repressions of life under Marxist totalitarian states understood the flip side of the argument. The Polish Nobel Laureate for Literature Czesław Miłosz wrote:

> *A true opium of the people is a belief in nothingness after death—the huge solace of thinking that for our betrayals, greed, cowardice, murders, we are not going to be judged.*[14]

If God does exist, then, following Freud, atheism can be seen as a psychological escape-mechanism by which we avoid taking ultimate moral

responsibility for our own lives. What Freud clearly fails to do is to answer the question of whether God exists or not.

Let me illustrate how this argument cuts two ways. In an interview in the *Guardian,* Stephen Hawking said "There is no heaven or afterlife … that is a fairy story for people afraid of the dark,"[15] a typically Freudian answer. I was asked to respond. My light-hearted (Freudian) one-line reply was, "Atheism is a fairy story for people afraid of the light". I was delighted to hear this interchange being quoted on BBC News. However, to be fair, I should point out that neither Hawking's statement nor mine was a statement of science. They were statements of *belief*. Whether they are true or not is another matter, and one on which Freud, as we have just seen, has nothing to say.

THE TOOTH FAIRY

A final example of the way scientists get it wrong is the suggestion that believing in God is like believing in Santa Claus, a flying spaghetti monster or the Tooth Fairy. I have met this accusation in several public settings. On one occasion, in a large university debate, I was challenged by a scientist with this argument. To settle the issue, I asked the audience to put up their hands if they had come to believe in Santa Claus as adults. No one did, but hundreds put up their hands when I asked for those who had come to believe in God as adults.

Putting God in the same category as Santa Claus just doesn't make sense. After all, right through history, some of the finest minds have given themselves to thinking about God. They have not done so with Santa Claus. The argument may win applause or laughter from a sympathetic audience, but it is simply what philosophers call a category mistake.

Now let's return to our question about Newton and Hawking.

DO WE HAVE TO CHOOSE?

Why did Stephen Hawking think we had to choose between science and God while Sir Isaac Newton did not?

I think there are two main reasons: confusion about the nature of God and confusion about the nature of scientific explanation.

1. Confusion about the nature of God

I used to assume that when I talked about God, people knew that I meant the God of the Bible: the personal, intelligent, powerful Creator and Sustainer of the universe. Yet I now find that many people think that by the word "God", I mean a "god of the gaps"—a god we invent as an explanation for the blanks in our understanding: "I can't explain it; therefore God did it". That's the kind of god the ancient Greeks believed in. The Greeks didn't understand lightning, so they invented a god of lightning to explain it. However, a little atmospheric physics at any modern university soon shows you that belief in such a god is unnecessary. But there is a widespread idea today that the God of the Bible is just such a god of the gaps—disappearing bit by bit as science advances, like the grin on the proverbial Cheshire cat.

The important thing to understand here is this: if you *define* God to be a god of the gaps—a place-holder, an "x" to stand temporarily for something that science has not yet explained—then of course you have to choose between science and God, *because that's the way you have defined God.* But then you are not thinking of the God of the Bible. It is another profound category mistake.

Werner Jaeger, a world expert on the ancient Near Eastern religions, points out that the gods of the ancient world had this in common: that their origins were described in terms of being "descended from the heavens and the earth". They were products of the primeval chaos of mass and energy and so were essentially *material* gods. By contrast, Jaeger wrote, the God of the Bible, the Hebrew God, is described as *creating* the heavens and the

earth; he was not descended from them. The God of the Bible is not a god of the gaps. He is the God of the whole show. He is the God of the bits of the universe we don't understand and the bits we do. We might just observe that Genesis does not begin with the statement, *In the beginning God created the bits of the universe we don't yet understand!*

It is very superficial to believe that increased scientific understanding squeezes God out. When Newton discovered his law of gravitation, he didn't say, "Now we've got a law of gravity, we don't need God". What he did do was write a book called *Principia Mathematica*, perhaps the most famous book in the history of science. And in it he expressed the hope that his calculations and observations would persuade a thinking person to believe in a deity.

You see, with most normal people, it is true that the more they understand about some beautiful or complex artefact, the more they admire the mind of the person that made it. The more they understand about painting, the more they can admire the genius of Rembrandt, not the less. The more they understand about engineering, the more they can admire the genius of a Rolls or a Royce. And the more Newton understood the way the universe worked, the more he admired the genius of the God who made it to operate in that way.

The key point here is that *science does not compete with God as an explanation.* Science gives a *different kind of explanation*. That leads us to think about the next defect in Hawking's thinking:

2. Confusion about the nature of scientific explanation

Newton and Hawking shared a common interest in gravity. Newton discovered the law of gravity, and Hawking did seminal research on gravity and black holes. But there is a striking difference between them. Newton, as we saw, regarded the law of gravity as one of the evidences of God's genius in designing the universe, whereas Hawking offered gravity as his main reason for *denying* the existence of God.

Many people assume that the reason for this shift of attitude is that over 300 years have passed since Newton made his discoveries, and science in the meantime has advanced so much further that belief in God has been rendered incredible. But I do not think this is true. Hawking's rejection of God because of gravity, and, indeed the rejection of God by Dawkins and many others, rests instead on several serious misunderstandings of the nature of explanation.

WHAT DOES SCIENCE EXPLAIN?

Our "Aunt Matilda and the cake" illustration shows that scientism—the belief that science can, at least in principle, explain everything—is false. Let us now ask a more precise question: *what exactly does science explain?* For instance, since we have been thinking about gravity, let us ask: what does the law of gravity explain? Surely that is obvious, you say; the law of gravity explains gravity. You may be surprised to discover that it doesn't, actually!

I used to enjoy teaching students how the law of gravity gives us a brilliant mathematical way of calculating the effect of gravity so that we can work out the velocity that a rocket needs to attain to escape the earth's gravitational field, or do the calculations needed to send a probe to Mars. But the law of gravity *does not tell us what gravity actually is*—only how it operates. Newton understood this distinction and said so.

That is, the law of gravity does not give us a complete explanation of gravity. That is often the case with science—even within its own sphere, a scientific explanation is rarely complete. The philosopher Ludwig Wittgenstein was referring to this when he wrote:

> *At the basis of the whole modern view of the world lies the illusion that the so-called laws of nature are the explanations of natural phenomena… the modern system makes it appear as though everything were explained.*[16]

The truth is that the laws of nature *describe* the universe; but they actually *explain* nothing. We pause to reflect that, from the perspective of science, the very existence of laws of nature is a mystery in itself. Richard Feynman, a Nobel Laureate in physics, writes:

> *… the fact that there are rules at all to be checked is a kind of miracle; that it is possible to find a rule, like the inverse-square law of gravitation, is some sort of miracle. It is not understood at all, but it leads to the possibility of prediction—that means it tells you what you would expect to happen in an experiment you have not yet done.* [17]

The very fact that those laws can be mathematically formulated was for Einstein a constant source of amazement and pointed beyond the physical universe to some spirit "vastly superior to that of man".[18]

RATIONAL EXPLANATION

The next thing we need to realise is that a scientific explanation of something is not necessarily the *only* rational explanation that is possible. There can be multiple explanations that are equally true at the same time.

Suppose you ask: *Why is this water boiling?* I may say that heat energy from the gas flame is being conducted through the copper base of the kettle and is agitating the molecules of the water to such an extent that the water is boiling. Or, I may say that the water is boiling because I would like a cup of tea. We see at once that both of these explanations are equally rational—they each make perfect sense—but they are very different. The first is scientific and the second is personal, involving my intentions, will and desire. What is also obvious is that the two explanations do not conflict or even compete. They complement each other.

What is more, both are necessary for a full explanation of what is going on. Also, the explanation in terms of personal agency is arguably the more

important—people had enjoyed drinking tea for millennia before they knew anything about thermodynamics! Aristotle pointed all of this out centuries ago when he distinguished between a material cause (the kettle, water, gas and so on) and the final cause (my desire for a stimulating beverage).

Similarly, in order to explain an automobile engine, we might mention the physics of internal combustion, or we might talk about Henry Ford. Both are rational explanations. And both are necessary for a comprehensive explanation. Scaling up this illustration to the size of the cosmos, we may say that God no more competes with science as an explanation of the universe than Henry Ford competes with science as an explanation of the motor car. God is an Agent-Creator explanation of the universe; he is not a *scientific* explanation. Aristotle, were he alive today, would be surprised to find just how many people appear unable to see the difference.

After all, to cite a delightful analogy used by novelist Dorothy Sayers:

> *The same dozen tones are materially sufficient to account for Beethoven's Moonlight Sonata and the noise the cat makes by walking on the keys. But the cat's performance neither proves nor disproves the existence of Beethoven.*[19]

Stephen Hawking claimed that God is not *necessary* to explain why the universe exists in the first place—why there is something rather than nothing. He believed that science could supply the answer. He wrote:

> *Because there is a law like gravity, the universe can and will create itself from nothing.*[20]

This statement *looks* scientific, and it was certainly written by a scientist. But not only is it *not* scientific; it is not even *rational*, as some rudimentary logic will show.

The first flaw: *Self-contradiction*

Hawking's statement is self-contradictory: "Because there is a law like gravity"—that is, because there is something—"the universe … will create itself from nothing". Hawking assumes that the law of gravity exists. That is not nothing, so he is guilty of a flat contradiction.

The second flaw: *Laws do not create*

Note carefully what Hawking says: "Because there is a law like gravity…" When I first read this, I thought, "Surely he meant to say, 'Because there is gravity…'" For, what would a law of gravity mean if there were no gravity for it to describe? What is more, not only did scientists not put the universe there; neither did science or the laws of mathematical physics. Yet Hawking seemed to think they may well have done. In his book *A Brief History of Time*, he suggested that a theory might bring the universe into existence:

> *The usual approach of science of constructing a mathematical model cannot answer the questions of why there should be a universe for the model to describe. Why does the universe go to all the bother of existing? Is the unified theory so compelling that it brings about its own existence? Or does it need a creator, and, if so, does he have any other effect on the universe?* [21]

The idea of a *theory* or *physical laws* bringing the universe into existence might sound impressive but does not actually make any sense. We saw above that Newton's law of gravitation does not explain gravity. Furthermore, it certainly does not *create* gravity. In fact, the laws of physics are not only incapable of creating anything; they cannot cause *anything* to happen. Newton's celebrated laws of motion never caused a single snooker ball to race across a table; that can only be done by people using a snooker cue. The laws enable us to analyse the motion and map the trajectory of the ball's movement in the future (provided nothing external

interferes),[22] but they are powerless to move the ball, let alone bring it into existence.

Yet well-known physicist Paul Davies appears to agree with Hawking:

> *There's no need to invoke anything supernatural in the origins of the universe or of life. I have never liked the idea of divine tinkering: for me it is much more inspiring to believe that a set of mathematical laws can be so clever as to bring all these things into being.[23]*

Notice in passing the non-scientific language in this statement: "*I have never liked … more inspiring to believe*". However, in the real world in which we live, the simplest law of arithmetic—1+1=2—never brought anything into being by itself. It has certainly never put any money into anyone's bank account. If you first put £100 into the bank and then later another £100, the laws of arithmetic will rationally explain how it is that you now have £200 in the bank. But if you never put any money into the bank and simply leave it to the laws of arithmetic to create money, you will remain a penniless pauper. The laws of arithmetic are not "clever" in the sense that they can bring something into existence. They can only be applied to things that already exist.

C.S. Lewis saw this long ago. Of the laws of nature, he wrote:

> *They produce no events: they state the pattern to which every event … must conform, just as the rules of arithmetic state the pattern to which all transactions with money must conform—if only you can get hold of any money … For every law, in the last resort, says: "If you have A, then you will get B". But first catch your A: the laws won't do it for you.[24]*

A world in which clever mathematical laws all by themselves bring the universe and life into existence is pure (science) fiction. Theories and laws do not bring matter or energy into existence or anything else. The view that they nevertheless somehow have that capacity seems a rather desperate

refuge (and it is hard to see what else it could be but a refuge) from the alternative possibility raised in Hawking's question cited above: "Or does it need a creator?"

The third flaw: *Self-creation is incoherent*

Finally, Hawking's statement that "the universe can and will create itself from nothing" is meaningless. If I say, "X creates Y", this presupposes the existence of X in the first place in order to bring Y into existence. If I say, "X creates X", I presuppose the existence of X in order to account for the existence of X. To presuppose the existence of the universe to account for its existence is logically incoherent.

What this shows is simply that a nonsense statement remains a nonsense statement even when written by a world-famous scientist.

Hawking has signally failed to answer the central question: *why is there something rather than nothing?* He says that the existence of gravity means the creation of the universe was inevitable. But how did gravity come to exist in the first place? What was the creative force behind its birth? Who put it there with all its properties and potential for mathematical description? Similarly, when Hawking argues, in support of his theory of spontaneous creation, that it was only necessary for "the blue touch paper" to be lit to "set the universe going", I am tempted to ask: where did this blue touch paper come from? It is clearly not part of the universe if it set the universe going? Who, then, lit it, if not God?

Allan Sandage, widely regarded as the father of modern astronomy, who discovered quasars and won the Crafoord Prize, astronomy's equivalent of the Nobel Prize, is in no doubt about his answer:

> *I find it quite improbable that such order came out of chaos. There has to be some organizing principle. God to me is a mystery but is the explanation for the miracle of existence—why there is something instead of nothing.[25]*

Trying to avoid the clear evidence for the existence of a divine intelligence behind nature, atheist scientists are forced to ascribe creative powers to less and less credible candidates like mass/energy and the laws of nature. Atheism simply does not deliver.

WHO CREATED THE CREATOR?

It is usually around this point in the discussion that someone asks: if you believe that God created the universe, then surely it is logical to ask, who created God? Doesn't that make belief in God look pretty silly? Dawkins uses this argument as one of his main reasons for dismissing God in *The God Delusion*.

However, it is easy to see that this—however impressive it may first sound—is not really an argument at all. Just think about it: if you ask the question who or what created God, you need to be clear about what are you assuming. You're assuming, are you not, that God was created? But what if he wasn't? Then your question is irrelevant. And that is a serious problem since the Bible describes God as a being who is both eternal and uncreated. Therefore, your question doesn't even apply to him, let alone threaten his existence, or the faith of those who believe in him. I suspect that if Richard Dawkins' book had been called *The Created Gods Delusion*, no one would have bought it. For anyone can see that created gods—what we usually call idols—are a delusion; it's something on which the whole Christian tradition would enthusiastically agree with him.

Dawkins' argument certainly applies to created things, but it falls short because it can be applied to his own view of the universe. If he insists that God is not an explanation, because you have to ask, "who created God?", then, by the same token, any reason he gives for the universe is not an explanation, unless he can say what caused it to come into being. I therefore asked him in a public debate this question:

You believe the universe created you, so who created your creator?

I’ve been waiting more than ten years for an answer to that. None has been forthcoming.

3. Mythbusters I: Religion depends on faith but science doesn’t

I am often told that the trouble with believers in God is just that: *they are believers*. That is, they are people of faith. Science is far superior because it doesn’t require faith. It sounds great. The problem is, it could not be more wrong.

Let me tell you about an encounter I had with Peter Singer, a world-famous ethicist from Princeton University in the USA. He is an atheist, and I debated with him in his home city of Melbourne, Australia, on the question of the existence of God. In my opening remarks, I told the audience what I told you earlier: that I grew up in Northern Ireland and that my parents were Christians.

Singer’s reaction was to say that this was an example of one of his objections to religion—that people tend to inherit the faith in which they were brought up. For him, religion is simply a matter of heredity and environment, not a matter of truth. I said, “Peter, can I ask you—were your parents atheists?”

“My mother was certainly an atheist. My father was maybe more agnostic,” he replied.

“So you’re perpetuating the faith of your parents too, like I am,” I said.

“It’s not faith, in my view,” he said.

“Of course it’s a faith—don’t you believe it?” I replied.

There was much laughter.

Not only that but, as I discovered later, cyberspace lit up with the question: doesn’t Peter Singer, a famous philosopher, realise that his atheism is a belief system? Has he never heard of people, like the cosmologist Allan Sandage, who became convinced by the evidence of the existence of God and converted to Christianity later in life?

WHAT IS FAITH?

Many leading atheists share Singer’s confusion about faith and, as a result, make equally absurd statements. “Atheists do not have faith,”[26] says Richard Dawkins, and yet his book *The God Delusion* is all about what he believes—his atheist philosophy of naturalism in which he has great faith. Dawkins, like Singer, thinks that faith is a religious concept that means *believing where you know there is no evidence*. They are quite wrong. Faith is an everyday concept, and they give the game away by frequently using it as such.

According to the *Oxford English Dictionary*, the word comes from the Latin *fides*, which means loyalty or trust. And, if we have any sense, we don’t normally trust facts or people without evidence. After all, making well-motivated, evidence-based *decisions* is just how faith is normally exercised—think of how you get your bank manager to trust you or the basis for your decision to get on board a bus or an aircraft.

Believing where there is no evidence is what is usually called *blind faith*; and no doubt in all religions you will find adherents who believe blindly. Blind faith can be very dangerous—witness 9/11. I cannot speak for other religions, but the faith expected on the part of Christians is certainly not blind. I would have no interest in it otherwise.

The Gospel-writer John says:

> *Now Jesus did many other signs in the presence of the disciples, which are not written in this book; but these are written so that you may believe that Jesus is the Christ, the Son of God, and that by believing you may have life in his name.* John, chapter 20, verses 30-31

John is telling us that his account of the life of Jesus contains the eyewitness record of evidence on which faith in Christ can be based. Indeed, a strong case can be made that much of the material in the Gospels is based on eyewitness testimony.[27]

DO ATHEISTS HAVE FAITH?

This confusion about the nature of faith leads many people to another serious error: thinking that neither atheism nor science involves faith. Yet, the irony is that atheism is a belief system and science cannot do without faith.

Physicist Paul Davies says that the right scientific attitude is essentially theological: “Science can proceed only if the scientist adopts an essentially theological worldview”. He points out that “even the most atheistic scientist accepts *as an act of faith* [emphasis mine] … a law-like order in nature that is at least in part comprehensible to us”.[28] Albert Einstein famously said:

> *… science can only be created by those who are thoroughly imbued with the aspiration towards truth and understanding. This source of feeling, however, springs from the sphere of religion. To this there also belongs the faith in the possibility that the regulations valid for the world of existence are rational, that is, comprehensible to reason.* ***I cannot conceive a genuine man of science without that profound faith*** *[emphasis mine]. The situation may be expressed by*

an image: science without religion is lame, religion without science is blind.[29]

Einstein evidently did not suffer from Dawkins' delusion that all faith is blind faith. Einstein speaks of the "profound faith" of the scientist in the rational intelligibility of the universe. He could not imagine a scientist without it. For instance, scientists believe (= have faith) that electrons exist and that Einstein's theory of relativity holds because both are supported by evidence based on observation and experimentation.

My lecturer in quantum mechanics at Cambridge, Professor Sir John Polkinghorne, wrote, "Science does not explain the mathematical intelligibility of the physical world, for it is part of science's founding *faith* [notice his explicit use of the word] that this is so…"[30] for the simple reason that you cannot begin to do physics without believing in that intelligibility.

On what evidence, therefore, do scientists base their faith in the rational intelligibility of the universe, which allows them to do science? The first thing to notice is that *human reason did not create the universe*. This point is so obvious that at first it might seem trivial; but it is, in fact, of fundamental importance when we come to assess the validity of our cognitive faculties. Not only did we not create the universe, but we did not create our own powers of reason either. We can develop our rational faculties by use; but we did not originate them. How can it be, then, that what goes on in our tiny heads can give us anything near a true account of reality? How can it be that a mathematical equation thought up in the mind of a mathematician can correspond to the workings of the universe?

It was this very question that led Einstein to say, "The most incomprehensible thing about the world is that it is comprehensible". Similarly the Nobel Prize winning physicist Eugene Wigner once wrote a famous paper entitled, "The unreasonable effectiveness of mathematics in the natural sciences".[31] But it is only unreasonable from an atheistic perspective. From the biblical point of view, it resonates perfectly with the

statements: “In the beginning was the Word … and the Word was God … All things came to be through him” (John 1 v 1, 3).

Sometimes, when in conversation with my fellow scientists, I ask them “What do you do science with?”

“My mind,” say some, and others, who hold the view that the mind is the brain, say, “My brain”.

“Tell me about your brain? How does it come to exist?”

“By means of natural, mindless, unguided processes.”

“Why, then, do you trust it?” I ask. “If you thought that your computer was the end product of mindless unguided processes, would you trust it?”

“Not in a million years,” comes the reply.

“You clearly have a problem then.”

After a pregnant pause they sometimes ask me where I got this argument —they find the answer rather surprising: Charles Darwin. He wrote:

> *…with me the horrid doubt always arises whether the convictions of man’s mind, which has been developed from the mind of the lower animals, are of any value or at all trustworthy.*[32]

Taking the obvious logic of this statement further, Physicist John Polkinghorne says that if you reduce mental events to physics and chemistry you destroy meaning. How?

> *For thought is replaced by electrochemical neural events. Two such events cannot confront each other in rational discourse. They are neither right nor wrong—they simply happen. The world of rational discourse disappears into the absurd chatter of firing synapses.*

> *Quite frankly that can't be right and none of us believe it to be so.* [33]

Polkinghorne is a Christian, but some well-known atheists see the problem as well. John Gray writes:

> *Modern humanism is the faith that through science humankind can know the truth—and so be free. But if Darwin's theory of natural selection is true this is impossible. The human mind serves evolutionary success, not truth".* [34]

Another leading philosopher, Thomas Nagel, thinks in the same way. He has written a book, *Mind and Cosmos,* with the provocative subtitle *Why the Neo-Darwinian View of the World is Almost Certainly False*. Nagel is a strong atheist who says with some honesty, "I don't want there to be a God". And yet he writes:

> *But if the mental is not itself merely physical, it cannot be fully explained by physical science. Evolutionary naturalism implies that we shouldn't take any of our convictions seriously, including the scientific world picture on which evolutionary naturalism itself depends.* [35]

That is, naturalism, and therefore atheism, undermines the foundations of the very rationality that is needed to construct or understand or believe in any kind of argument whatsoever, let alone a scientific one. Atheism is beginning to sound like a great self-contradictory delusion —"a persistent false belief held in the face of strong contradictory evidence".

Of course, I reject atheism because I believe Christianity to be true. But I also reject it because I am a scientist. How could I be impressed with a worldview that undermines the very rationality we need to do science? Science and God mix very well. It is science and atheism that do not mix.

SIMPLICITY AND COMPLEXITY

Another way of looking at this is to think once more about explanation. We are often taught in science that a valid explanation seeks to explain complex things in terms of simpler things. We call such explanation "reductionist" and it has been successful in many areas. One example is the fact that water, a complex molecule, is made up of the simpler elements hydrogen and oxygen.

However, reductionism doesn't work everywhere. In fact, there is one place where it does not work at all. Any full explanation of the printed words on a menu, say, must involve something much more complex than the paper and ink that comprise the menu. It must involve the staggering complexity of the mind of the person who designed the menu. We understand that explanation very well. Someone designed the menu, however automated the processes are that led to the making of the paper and ink and carrying out the printing.

The point is that when we see anything that involves language-like information, we postulate the involvement of a mind.

We now understand that DNA is an information-bearing macromolecule. The human genome is written in a chemical alphabet consisting of just four letters; it is over 3 billion letters long and carries the genetic code. It is, in that sense, the longest "word" ever discovered. If a printed, meaningful menu cannot be generated by mindless natural processes but needs the input of a mind, what are we to say about the human genome? Does it not much more powerfully point to an origin in a mind—the mind of God?

Atheist philosophy starts with matter/energy (or, these days, with "nothing") and claims that natural processes and nature's laws, wherever they came from, produced from nothing all that there is—the cosmos, the biosphere and the human mind. I find this claim stretches my rationality to breaking point, particularly when it is compared with the biblical view that:

> *In the beginning was the Word … the Word was God … All things were made through him…* John 1 v 1,3

This Christian worldview resonates first with the fact that we can formulate laws of nature and use the language of mathematics to describe them. Secondly, it sits well with the discovery of the genetic information encoded in DNA. Science has revealed that we live in a word-based universe, and we have gained that knowledge by reasoning.

C.S. Lewis argues this point saying that "unless human reasoning is valid no science can be true." If ultimate reality is not material, not to take this into account in our context is to neglect the most important fact of all. Yet the supernatural dimension has not only been forgotten, it has been ruled out of court by many. Lewis observes:

> *The Naturalists have been engaged in thinking about Nature. They have not attended to the fact that they were thinking. The moment one attends to this it is obvious that one's own thinking cannot be merely a natural event, and therefore something other than Nature exists.[36]*

Not only does science fail to rule out the supernatural—the very doing of science or any other rational activity rules it in. The Bible gives us a reason for trusting reason. Atheism does not. This is the exact opposite of what many people think.

4. Mythbusters II: Science depends on reason but Christianity doesn’t

The flip side of the common objection addressed in the last chapter is that science depends on reason, and belief in God does not. This notion is as widespread and as completely wrong as the topic of the previous chapter. Once more I shall confine myself to Christianity. There clearly are religions that are marked by an anti-intellectualism. Biblical Christianity is not, in spite of a residue of its professed followers who mistakenly think that it is.

WHAT EXACTLY IS SCIENCE?

You may have noticed that we have gone happily burbling on about science without saying what it actually is. Now is the time to do so. It turns out—especially when philosophers get involved—that science is not that easy to define. However, we can content ourselves here with certain things that we all associate with science.

Before the 19th century the term “natural philosophy” was used to describe what we now call “science”. Linguistically, “natural philosophy” simply means “the love of wisdom about nature”. Science, then, is a way of thinking about the natural world and, we will all know from school, it is associated with making observations, looking for explanations and doing experiments to test them. It has a very long history. In fact, it is arguable

that one of its first practitioners was Aristotle in the 3rd century BC, almost 2,500 years ago.[37] He was famous for his observations of living things, and many regard him as the father of the science of biology.

However, like Plato before him, he sometimes preferred to reason about nature from philosophical principles rather than empirical observation, and that led him astray from time to time. For instance, he is reputed to have thought that heavier objects, when dropped would reach the ground faster than lighter objects. Galileo famously challenged this and devised a clever experiment to show Aristotle was wrong. He rolled spheres down an inclined plane and discovered that the distance travelled was proportional only to the square of the time taken, and not at all to their masses. His experiment refuted the hypothesis (another important word in science) that objects fell at different speeds if they were of different masses.

This reminds us that even very bright people like Aristotle don't always get it right. It also tells us that science is a *progressive human endeavour*. Its cumulative success, even though it sometimes proceeds by fits and starts, is very impressive.

THE SCIENTIFIC METHOD

Now, making observations, looking for explanations and testing them is not a way of thinking that is confined to the sciences. It is a way of thinking we all use a great deal of the time. Suppose we are interested in a buying a new bicycle. We first observe lots of them on the road, in magazines and on the internet. We compare prices. Some are very expensive, and we try to find out what explains the high price: perhaps the frame is made of titanium, or there are high-tech components built in. More research reveals things that we may first have overlooked. We fix our ideas on a few possibilities and then we go and test them out by riding them to see if they live up to what we hope for. After all of that, we hand over our precious cash, and ride happily into the sunset.

What we have done is common-sense rational thinking, yet it is just what scientists do most of the time. The point is that scientific thought is (or should be) rational, but rational thought is by no means confined to the sciences.

What will now surprise some of my readers—but it shouldn't—is the fact that this kind of thinking is to be found *everywhere* in the Bible. When Jesus was asked what the greatest commandments were, he said the first was to "…love the Lord your God with all your heart and with all your soul and with all your mind and with all your strength." (Mark 12 v 30). Notice the inclusion of "mind" in this list. God is not anti-reason. He gives us the highest-level encouragement possible to use our minds; and not only to use them to think about him but to think about the natural world we live in. On the doorway of the famous Cavendish Physics Laboratory in Cambridge, Sir James Clerk Maxwell had the words of Psalm 111 carved above the door:

> *The works of the Lord are great, sought out of all them that have pleasure therein.* Psalm 111 v 2 (KJV)

That piece of ancient Hebrew poetry is a positive mandate for doing science: to have pleasure in nature, to wonder at it, and to try to discover how it works.

In another ancient Bible book, Job, there is a whole chapter in which God challenges Job very strongly because he does not know much science. Here's a sample:

> *Then the LORD answered Job out of the whirlwind and said:*
>
> *"Who is this that darkens counsel by words*
> *without knowledge?*
> *Dress for action like a man;*
> *I will question you, and you make it known to me.*

"Where were you when I laid the foundation of the
earth? Tell me, if you have understanding.
Who determined its measurements—surely you know!

"Or who stretched the line upon it?
On what were its bases sunk,
or who laid its cornerstone,
when the morning stars sang together
and all the sons of God shouted for joy?

"Or who shut in the sea with doors
when it burst out from the womb,
when I made clouds its garment
and thick darkness its swaddling band,
and prescribed limits for it
and set bars and doors,
and said, 'Thus far shall you come, and no farther,
and here shall your proud waves be stayed'?" Job 38 v 1-11

There is much more like this in the book of Job. These chapters are full of a fascinating series of questions about nature and its workings—the sort of questions that scientists ask. Questions about the cosmos: "Do you know the ordinances of the heavens? Can you establish their rule on the earth?" And questions about animal behaviour: "Do you know when the mountain goats give birth? Do you observe the calving of the does? Can you number the months that they fulfil, and do you know the time when they give birth?"

The answers to such questions involve observation and calculation of numbers and time intervals. Real science is called for. To add to that, in the first book of the Bible, Genesis, we find that God instructs Adam to name the animals (Genesis 2 v 19). Taxonomy, the naming of things, is a basic scientific activity in a huge variety of fields. The instruction to name the animals, in a book where God himself is recorded as naming certain things,

is highly significant for our understanding of one of the purposes for which humanity exists: to explore the creation and to study it by naming its constituent parts with increasing sophistication. It's yet another biblical mandate for doing science.

CONTROLLED TRIALS

One of the things that science has made us very familiar with is the controlled trial, especially in medicine. We are often given statistical information that drug X has been shown to be effective in treating disease Y. So far as I know, the first such trial in literature is recorded in the Bible book of Daniel, chapter 1. Daniel and his friends were captured by the King of Babylon, Nebuchadnezzar, during a siege of Jerusalem in around the sixth century BC.

The four young men were enrolled in the equivalent of the state university where they were to be educated for three years as advisors to the king—all expenses paid. In particular, they were to be fed from the king's table. Daniel protested to the Dean of Students about this—he, presumably, did not wish to defile himself with food and wine that had in all likelihood been offered to pagan deities in which Daniel did not believe. He asked the dean to give the four friends simple vegetarian food. The dean was alarmed and pointed out to Daniel that if the king saw that Daniel and his friends had deteriorated in health and fitness, he, the dean, might lose his head. It is clear from the account that the dean liked Daniel and wished to help him.

Whereupon Daniel proposed that the dean tested the four students in secret for ten days and then make a judgement on what he saw; that is, Daniel was offering to provide hard evidence. The dean agreed, and after the trial, the four looked much healthier than the other students. The dean now had the evidence he needed to fall in with Daniel's request on a more permanent basis.

This is a very clear ancient example of decision-making on the basis of a controlled experiment and is of the very essence of science. For someone to suggest that the Bible knows nothing of the kind of thinking involved in science tells us more about that person than it does about the Christian Scriptures.

The scientific test suggested by Daniel was geared to distinguishing between different kinds of natural food—the meat from the king's table and vegetables. But the Bible also records another incident geared to distinguishing *scientifically* between the natural and the supernatural. 1 Samuel chapter 6 records how the Philistines, who had captured the Ark of the Covenant from Israel, decide to return it because they associated it with diseases that had suddenly afflicted them. They asked expert advice from their priests, who said that they should put the ark (a wooden box) on a cart harnessed to two cows that had just calved. They were to take the calves from the cows and send the cart on its way. If the cart returned to the land of Israel, they were to conclude that it was indeed God, the God of Israel, who had afflicted them.

Their reasoning was based on a fundamental observation in animal biology: that there is a very strong, instinctive maternal bond between calves and their mothers. The Philistine leaders reasoned that, if the two cows abandoned their calves and took the road *away from them* towards the Israelite camp, it would be an action against a powerful force of nature—and therefore unnatural in the extreme. It would therefore be reasonable to draw the conclusion that supernatural power must be involved. It is noteworthy that the text records that: "the cows went straight in the direction of Beth-shemesh along one highway, lowing as they went. They turned neither to the right nor to the left." [38] Their lowing was perhaps an indication that they sensed deep down that they were being led to do something against their natural instincts.

NATURAL AND SUPERNATURAL

Now, some people say that if an explanation is to be regarded as scientific, it must be a *natural* explanation in terms of physical processes—for instance, the movement of vast tectonic plates as an explanation of earthquakes. That is, their *definition* of science includes specifying that explanations may only be in terms of natural processes.

If we apply that definition to the incident with the cows, we would have to say that the supernatural explanation is not scientific. The thing we must not say (but many, nevertheless, do) is that it is therefore not a rational or a true explanation. It is a perfectly rational explanation. Remember, the very existence of human reason gives evidence of a supernatural dimension.

What the incident of the cows illustrates is that, even if you restrict science to natural explanations, science can still give evidence of the supernatural when it shows that no natural explanation is forthcoming. In other words, there are situations where we shouldn't just give up if explanations in terms of natural processes don't work; we should be prepared to follow the evidence where it leads, even if that involves a supernatural dimension. Science cannot answer all questions.

As a much more recent example of such thinking at work, take the case of philosopher Professor Antony Flew, a lifelong atheist who, late in life, changed his mind and came to acknowledge the existence of God. He gave as the reason for his conversion, after over fifty years, the fact that "biologists' investigation of DNA has shown, by the almost unbelievable complexity of the arrangements which are needed to produce life, that intelligence must have been involved". He added, "My whole life has been guided by the principle of Plato's [account of] Socrates, 'Follow the evidence wherever it leads.'" And what if people don't like it? "Well, that's too bad," said Flew.[39]

Flew was right. The principle of following evidence where it leads is extremely important. It may mean that we have to go beyond narrowly defined scientific explanations in terms of natural processes, but it need not lead us beyond rational explanation. It might even lead us to the right

explanation![40] This attitude will certainly mean that we reject the view expressed by Richard Lewontin, a world-famous geneticist from Harvard, when he wrote:

> *Our willingness to accept scientific claims that are against common sense is the key to an understanding of the real struggle between science and the supernatural. We take the side of science in spite of the patent absurdity of some of its constructs ... in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment ... to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counterintuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute for we cannot allow a Divine foot in the door.[41]*

This is honest, certainly, but it is not rational. It is an expression of irrational prejudice, unworthy of a thinking person, let alone a scientist. Just think of what people would say if I wrote, “I take the side of the Bible in spite of the patent absurdity of some of its constructs … in spite of the tolerance of the biblical community for unsubstantiated just-so stories … because I have a prior commitment to theism”. I would be laughed to scorn —and rightly so.[42]

To come to the view that the Bible speaks truth about God and life, one does not need to do any of that. In fact, according to the New Testament, the rational principle of following the evidence where it leads is the very way in which we can come to believe that the Christian faith is true; for, just as faith in science is evidence-based, similarly Christianity is an evidence-based faith. Here is what the apostle John says, as we pointed out earlier:

> *Now Jesus did many other signs in the presence of the disciples, which are not written in this book; but these are written so that you may believe that Jesus is the Christ, the Son of God, and that by believing you may have life in his name.* John 20 v 30-31

John records a number of miracles that Jesus did. He calls them “signs”, for his purpose is to show how each of them has a deeper meaning that informs us about who Jesus is. John has collected them together in his Gospel in order to convince even his most sceptical readers that Jesus is the Christ, the Son of God, and to show them how, through believing, any of them can receive life in his name.

Such claims as Jesus made—to be God become human, to be the light of the world, the truth, the bread of life, the good shepherd, and the resurrection and the life—are so stupendous that anyone would require strong evidence to believe them. It is that evidence that John provides. His Gospel is full of Jesus making powerful logical arguments and appealing to his listeners’ reason. For instance, when some people in Jerusalem said to him: “Abraham is our father”, Jesus replied with sharp and penetrating logic:

> *If you were Abraham’s children, you would be doing the works Abraham did, but now you seek to kill me, a man who has told you the truth that I heard from God. This is not what Abraham did.* John 8 v 39-40

His hearers realised that they were beaten by sheer truth and logic, so their only remedy was to pick up stones to throw at him. Sadly, that is a tactic that continues to this day.

Consistent with that, Christians are told that they must always be prepared to give an intelligent defence of what they believe to anyone who asks them for a reason for the hope that they have.[43]

I could go on, but it would be much more convincing if you were to read the Gospel of John and immerse yourself in some of the many arguments that Jesus used to communicate his message. You will then see the strength of the claim of Christianity to be a very reasonable faith.

That is one of the reasons why I, as a mathematician, feel very much at home as a Christian, since both science and the Bible insist on the importance of rational argument.

5. Can we really take the Bible seriously in a scientifically literate world?

Many of you will quite understandably come back at me at this point and say, “Hold on a moment. Can you really maintain that the Bible is full of reason and logical argument since some of its claims have been completely discredited by science? Take its claim about creation, for instance. Science doesn’t talk about creation, does it? It talks about a Big Bang.”

“Worse still, if you take what the Bible says about creation literally, don’t you end up believing that the earth is less than 10,000 years old, and so contradict everything we know from science about the age of the earth? There is therefore no point in bringing the Bible into the discussion if you want us to listen to you.”

Well, I shall have to take a risk here. I would, of course, very much like you to take what I say seriously. I even dare to hope that, if you have followed me this far and are at least prepared to entertain the idea that God and science are not the enemies once imagined, then you might be prepared to carry on reading while I tell you *why* I think that science and the Bible are not sworn enemies.

Many of us are taught at school and university how to take science seriously, but far fewer have been taught how to take ancient documents

seriously. And if we have no idea how to handle a collection of documents like the Bible, then it is not hard to find in the Bible conflicts with science. Now, since most of you have done some thinking about science, I wish now to encourage you to adopt a scientific, rational attitude and apply it to some thinking about the Bible before coming to your final conclusion.

GOD'S TWO BOOKS

The man often regarded as the father of modern science, Sir Francis Bacon (1561-1626), wrote that God has written two books, not just one: namely Scripture and creation.[44]

This gives us a helpful way of comparing the rational scientific activity of interpreting nature and the rational theological activity of interpreting the Bible. We have two sets of "data": the first is the information we get from studying nature and the second that which we get from studying the Bible. We will all agree that the Bible requires interpretation, but not all are aware that nature also needs interpretation.

Take this famous example. In the 3rd century BC, the Greek philosopher Aristotle taught that the earth was fixed in the centre of the universe, and the sun, stars and planets revolved around it.[45] This fixed-earth view held sway for centuries (and was the cause of Galileo's problems discussed in chapter 2). After all, it made a lot of sense to ordinary people: the sun rises and sets—it appears to go round the earth; and, if the earth moves, why aren't we all flung off into space? Why does a stone, thrown straight up into the air, come straight down if the earth is rotating rapidly? Why don't we feel a strong wind blowing in our faces in the opposite direction to our motion? Surely the idea that the earth moves is absurd?

This fixed-earth interpretation also seemed to fit in well with what the Bible says:

> *He set the earth on its foundations, so that it should never be moved.* Psalm 104 v 5

Furthermore, the Bible seemed not only to teach that the earth was fixed; it clearly said that the sun moved:

> *The sun rises, and the sun goes down, and hastens to the place where it rises.* Ecclesiastes 1 v 5

In 1543 the astronomer Nicholas Copernicus published his famous work *On the Revolutions of the Celestial Orbs*, in which he advanced the view that the earth and the planets orbited the sun. This startling new scientific theory was called into question by Protestants and Catholics alike.

Reformer Martin Luther, in an off-the-cuff dismissal, said that Joshua had told the sun, not the earth, to stand still.[46] John Calvin also believed that the earth was fixed:

> *By what means could it [the earth] maintain itself unmoved, while the heavens above are in constant rapid motion, did not its Divine Maker fix and establish it?" [47]*

In 1632, Galileo strengthened Copernicus' challenge to the Aristotelian view. We all know what happened. Galileo turned out to be right, and I imagine that everyone reading this accepts that the earth is not fixed in that sense.

Think about the situation. For centuries, everyone agreed on the fixed-earth theory. Then Galileo challenged it, and subsequently, the number of fixed-earthers diminished as the number of moving-earthers increased, until now the vast majority of people accept the interpretation of nature that holds that the earth moves relative to the sun and the fixed stars.

Does this then flatly contradict the Bible, which says the earth is fixed?

The answer is “yes” if you insist on interpreting the statement “He set the earth on its foundations, so that it should never be moved” at the base level of literalism. But do you have to do that? Some Christians will insist, “Yes, you have to interpret all of the Bible literally, or you destroy its authority”. Now, I understand their desire to protect the Bible, but you cannot protect it by saying what is not true. Take for instance the statement that Israel was “a land flowing with milk and honey”.[48] Is one to take this literally—that there was a great sticky river of milk and honey flowing through the land? Of course not. This is metaphorical language. The milk and honey were literal, but “flowing” is a metaphor to express vividly that the land was rich in pasture, bees and dairy products. However, please note that the metaphor “flowing” does stand for something real—literal prosperity.

Ordinary language is full of such metaphors. If you told me that Darren was flying down the road in his new sports car, I would not interpret “flying” as literal but as a metaphorical way of saying that he was (literally) driving very fast. The statement is literal at one level but not at another. Scholars often use the word “literalistic” to describe the first level. Here, once more, we see that the metaphor stands for something real.

It is here that much confusion lies. It is the use of the word “literal” that is misleading.

LITERALLY METAPHORICAL

This matter is of such importance that I am going to give another example. Jesus said, “I am the door” (John 10 v 9). Do we take that literally (or better, literalistically)? Of course not. Why not? Because we know from our experience of the world (science in a generalised sense) what doors of wood, metal and other materials are like, and it is obvious Jesus is not one of those. It is a metaphor. Yet, we emphasise, *it is a metaphor for something real*. Jesus *is* a real door; an *actual* doorway into a living experience of God.

In order to have an adult discussion about science, God and the Bible we must take on board two things:

- The Bible, like all literature and speech, is full of metaphors and highly pictorial language.
- Metaphors stand for something real. Confusingly, we often use the word “literal” when we mean something like “in its natural reading”.

Now back to the earth. There was a time when our experience of the world around us fitted in very well with the idea that the earth was geometrically fixed. But our experience has deepened, and we now know that it is not fixed in the literal sense. We also know that the book of Psalms is highly poetic. So, one thing we can do is see if there is a reasonable interpretation, in metaphorical terms, of the psalmist’s statement that the earth is “fixed”. For instance, we might say that God has fixed the earth not in the geometrical sense but in the sense that he has endowed it with stabilities of different kinds so that it is fixed for his purposes, and we can therefore rely on the succession of the seasons: “seedtime and harvest”.

In connection with the motion of the earth, we can now see that, although the Bible texts *could* be understood to support a fixed earth, there is a *reasonable* alternative. This has the effect of making sense of Scripture and not generating an artificial clash with scientific discovery by sticking doggedly to a literalistic interpretation.

It was Galileo who said that the Bible teaches us “how to go to heaven and not how the heavens go”. That is largely true. We do not learn science from the Bible, nor do we expect to. I learned none of my mathematics in its pages. However, it would be a mistake to think that the Bible has *nothing* interesting to say about the physical universe. For instance, the initial statement of Genesis, “In the beginning, God created the heavens and the earth”, is a statement about the very same heavens and earth that physicists and chemists study.

Not only that, but the Bible and science evidently agree that the universe had a beginning. That is quite remarkable, for, from the cosmological perspective, the idea of a beginning belongs to the 20th century. Up until that time the view of Aristotle—that the universe was eternal—had dominated European thinking. The irony is that the Bible had been saying that there was a beginning for thousands of years. It took astrophysics a long time to catch up! And, as I suggested at an international meeting of scientists, philosophers and theologians, if scientists had taken the biblical perspective seriously at an earlier date, they might well have searched for evidence of a beginning before they did.

THE ORIGINS OF THE UNIVERSE

It was, in fact, a Belgian priest, Georges Lemaitre, a believer in God, who first suggested on the basis of Einstein's theories that there had been a beginning to space time. That beginning was eventually jokingly called "the Big Bang" by the cosmologist Sir Fred Hoyle, who did not himself believe in it. However, the scientific evidence of a beginning steadily increased—the redshift in the light coming from galaxies, the expanding universe and the discovery of the microwave background have all contributed to our current understanding that the universe blinked into existence at a single point in time and space. We now have the Standard Model of physics based on these brilliant observations.

But doesn't the Big Bang explanation contradict the creation explanation?

Not at all. For the Big Bang is not an explanation at all. It is simply a label saying there was a beginning. It says nothing about *how* the universe came to exist in the first place. The Bible is giving a reason for the existence of the universe. It says God created it: there was a beginning caused by God, and if some people wish to label that beginning the Big Bang, that is fine. It was a Big Bang caused by God.

But doesn't science contradict the Bible on the age of the universe?

Science talks about an origin of the universe 13.8 billion years ago, not in the very recent past as some readings of Genesis 1 might indicate. Isn't that enough to give up on the Bible right away? The conflict here is not between the Bible and science but between a *particular interpretation* of the Bible and science.

Christians hold a variety of views on the precise relationship between the early chapters of Genesis and the physical world as we are growing to understand it. Here is how I resolve this particular issue, by taking a closer look at what the Bible actually says in its opening pages. Genesis 1 v 1 – 2 v 3 has a three-part structure. Here is a simple table of contents of the first section.

Statement regarding the creation of the heavens and the earth: Genesis 1 v 1-2
Six days of God's creation and organisational activity, culminating in the creation of human beings in his image: Genesis 1 v 3 – 2 v 1
The seventh day of God's rest—Sabbath: Genesis 2 v 2-3

In this three-part structure, the initial creation act is separated from the six days of creation that follow it. There is a clear pattern to the days: they each begin with the statement "And God said...", and end with the statement "And there was evening and there was morning, the *n*'th day". I understand the text to be saying that Day 1 begins in verse 3 and not in verse 1. This is suggested in the original text by the fact that the verb "created" in Genesis 1 v 1 is in the perfect tense; and this is to denote "an event that took place before the storyline got going".[49] The use of the narrative tense begins in verse 3.

The implication of this is that "the beginning" of Genesis 1 v 1 did not necessarily take place on Day 1 as is frequently assumed in some

interpretations. The initial creation could have been an event that took place before Day 1—but Genesis does not tell us how long before.

This means that the question of the age of the earth (and of the universe) is a separate question from the interpretation of the days, a point that is frequently overlooked in many of the heated discussions around this question. In other words, *quite apart from any scientific considerations*, we can read Genesis 1 v 1 in a way that leaves the age of the universe indeterminate.[50] I believe there is therefore no in-principle objection to the current scientific dating from the biblical perspective. This is an example where close attention to language and grammar can avoid an unnecessary clash between science and the interpretation of Scripture.

What is required of all of us that we become better readers of both "books": to understand the limitations of science to offer us explanations of meaning, value and purpose; and to read the text of scripture carefully to weigh its meaning.

But there is a very important area where those who reject a theistic worldview take issue with belief in God in general, and the content of the Bible in particular: *miracles.*…

6. Miracles: A step too far?

I can imagine some of my readers saying, “So far, so good. It seems reasonable enough to apply to the Bible the same kind of criteria we would apply to any other literature. However, are you also going to say that we can easily reconcile the Bible with science or science with the Bible simply by regarding any difficult passages as metaphorical?”

It’s a fair objection. For instance, as I mentioned above, one of the central claims of the Bible is that Jesus Christ rose from the dead. Are we to take this as an event in history? If we do, then it was clearly something supernatural, and anyone who denies the existence of God will face a choice between mutually exclusive alternatives: either we believe in the possibility of miracles or we believe in the scientific understanding of the laws of nature, but not both. Here is Richard Dawkins expressing the thought in his typically robust manner.

> *The nineteenth century is the last time when it was possible for an educated person to admit to believing in miracles like the virgin birth without embarrassment. When pressed, many educated Christians are too loyal to deny the virgin birth and the resurrection. But it embarrasses them because their rational minds know that it is absurd, so they would much rather not be asked.[51]*

Dawkins here echoes the famous contention of the Enlightenment philosopher David Hume that “miracles are violations of the laws of nature”.

However, it cannot be quite as simple as Hume or Dawkins think. There are highly intelligent, eminent scientists who disagree with him; for instance: Professor William Phillips, Physics Nobel Prizewinner 1998; Professor John Polkinghorne FRS, quantum physicist, Cambridge; Sir John Houghton, former director of the British Meteorological Office and head of the International Governmental Panel on Climate Change; and the current director of the National Institute of Health and former director of the Human Genome Project, Francis Collins. These distinguished scientists are well aware of the arguments against miracles. Nevertheless, publicly and without embarrassment or a sense of absurdity, each affirms his belief in the supernatural and, in particular, in the resurrection of Christ—which they regard, as I do, as the supreme evidence for the truth of the Christian worldview.

One of the scientists just mentioned, Francis Collins, gives a wise caution regarding the matter of miracles:

> *It is crucial that a healthy scepticism be applied when interpreting potentially miraculous events, lest the integrity and rationality of the religious perspective be brought into question. The only thing that will kill the possibility of miracles more quickly than a committed materialism is the claiming of miracle status for everyday events for which natural explanations are readily at hand.[52]*

For that reason, in the next chapter we will concentrate on the resurrection of Jesus, in order to give the discussion as sharp a focus as possible. It was the miracle of the resurrection that set Christianity going, and that same miracle is its central message. Indeed, the basic qualification of a Christian apostle was to be an eyewitness of the resurrection.[53] Without the resurrection, there simply is no Christian message. The apostle Paul writes, “And if Christ has not been raised, our preaching is useless and so is your faith.”[54]

THE LAWS OF NATURE

Let's remind ourselves of the perspective of contemporary science and its thinking about the laws of nature. Since scientific laws embody cause-effect relationships, scientists nowadays do not regard them as merely capable of *describing* what has happened in the past. Provided we are not working at the quantum level, such laws can successfully predict what will happen in the future with such accuracy that, for example, the orbits of communication satellites can be precisely calculated, and moon and Mars landings are possible.

Many scientists are therefore convinced that the universe is a closed system of cause and effect.

In light of this, it is understandable that they resent and reject the idea that some god could arbitrarily intervene and alter, suspend, reverse, or otherwise "violate" these laws of nature. To them, that would seem to contradict the immutability of those laws, and thus overturn the very basis of our scientific understanding of the universe.

Their first objection, again stemming from David Hume, is that belief in miracles in general, and in the New Testament miracles in particular, arose in primitive, pre-scientific cultures, where people were ignorant of the laws of nature and so readily accepted miracle stories. Any initial plausibility which this explanation may seem to possess disappears rapidly when it is applied to New Testament miracles like the resurrection. A moment's thought will show us that, in order to recognise some event as a miracle, there must be some perceived regularity to which that event is an apparent exception! You cannot recognise something as abnormal if you do not know what *is* normal.

This was actually well appreciated long ago—indeed, at the time of the writing of the New Testament documents. Interestingly, the historian Luke, who was a doctor trained in the medical science of his day, raises this very matter. In his account of the rise of Christianity, Luke informs us that the first opposition to the Christian message of the resurrection of Jesus Christ

came not from atheists, but from the high priests of Judaism. They were highly religious men of the party of the Sadducees. They believed in God. They said their prayers and conducted the services in the Temple. But that did not mean that the first time they heard the claim that Jesus had risen from the dead, they believed it. They did not believe it, for they had embraced a worldview which denied the possibility of bodily resurrection of anyone at all, let alone that of Jesus Christ.

To suppose that Christianity was born in a pre-scientific, credulous, and ignorant world is simply false to the facts. The ancient world knew the law of nature as well as we do, that dead bodies do not get up out of graves. Christianity won its way because of the sheer weight of evidence that one man had actually risen from the dead.

The second objection to miracles is that now we know that there are laws of nature and can describe them, miracles are simply impossible—this is Hume's famous objection. However, I don't think this objection holds water. Let me illustrate.

Supposing this week I put £10 in the drawer of my desk. The following week, I put in a further £20. And then the week after, another £10 note is added, and the drawer closed and locked. The laws of arithmetic allow me to predict that the next time I open my drawer, I shall find £40.

But suppose when I next open the drawer, I find just a single £10 note: what shall I conclude? That the laws of arithmetic have been broken? Certainly not! I might more reasonably conclude that some thief has broken not the laws of arithmetic but the laws of the land and has stolen £30 out of my drawer. One thing it would be ludicrous to claim is that the existence of laws of arithmetic make it impossible to believe in the existence of such a thief or the possibility of his intervention. Quite the reverse is true: it is the normal workings of those laws that cause us to believe in the existence of the thief and his activity in my house.

This analogy also reminds us that the scientific use of the word “law” is not the same as the legal use, where we often think of a law as constraining someone’s actions. There is no sense in which the laws of arithmetic constrain or pressurize the thief in our story. Newton’s law of gravitation tells me that if I drop an apple, it will fall towards the centre of the earth. But that law does not prevent someone intervening and catching the apple as it descends. In other words, the law *predicts* what will happen, provided there is no change in the conditions under which the experiment is conducted.

Thus, from the theistic perspective, the laws of nature predict what is bound to happen if God does not intervene. It is no act of theft, of course, if the Creator intervenes in his own creation. To argue that the laws of nature make it impossible for us to believe in the existence of God and the likelihood of his intervention in the universe is plainly false. It would be like claiming that an understanding of the laws of the jet engine would make it impossible to believe that the designer of such an engine could, or would, intervene and remove the fan. Of course he could intervene. Moreover, his intervention would not destroy those laws. The very same laws that explained why the engine worked with the fan in place would now explain why it does not work with the fan removed.

David Hume was, therefore, incorrect to assert that miracles “violate” the laws of nature. What we could say is that it is a law of nature that human beings do not rise again from the dead *by some natural mechanism*. But Christians do not claim that Christ rose from the dead by such a mechanism. This point is of vital importance for the whole discussion: Christians claim that Jesus rose from the dead by supernatural power. By themselves, the laws of nature cannot rule out that possibility. When a miracle takes place, it is the laws of nature that alert us to the fact that it is a miracle.

Christians do not deny the laws of nature. On the contrary, they regard the laws of nature as descriptions of those regularities and cause-effect relationships which have been built into the universe by its Creator, and according to which it normally operates. If we did not know them, we should never recognise a miracle if we saw one. The crucial difference between the Christian view and a world-view that denies the existence of God is that Christians do not believe that this universe is a closed system of cause and effect. They believe that it is open to the causal activity of its Creator God.

If one admits the existence of a Creator, the door is inevitably open for that same Creator to intervene in the course of nature. There is no such thing as a tame Creator who cannot, or must not, or dare not actively get involved in the universe he has created. Miracles may occur.

THE BIGGER PROBLEM: EVIL AND SUFFERING

I am well aware that there are many people, scientists included, for whom the existence of evil and suffering constitutes a very big problem. “If you are right”, they say, “that there is a God who can intervene in the affairs of this world, why then does he not intervene to deal with the most pressing issue of all—the problem of evil and suffering?”

Many a fellow scientist has said to me that there may well be evidence of supernatural intelligence behind the universe, but please don’t talk about a personal God who cares. Does not the lamentable state of the world with its endless violence and evil, to say nothing of natural catastrophes, prove the exact opposite? That is, it is not science that takes them away from God but suffering—which can be seen as rather strange, since removing God from the equation simply leaves us with the problem without any hope of an ultimate solution.

I admit that this is one of the deepest questions that those of us who believe in God face. It demands a much more thorough treatment than

could be given in this small book. Should you be interested in what my response to it is, I refer you to a book on the topic that I have written jointly with Professor David Gooding.[55] Suffice it to say here that the Christian worldview, and the teaching of Jesus in particular, has substantial and compelling things to say, not only about the reality of suffering and evil, but about what God has done and is doing to solve this problem. The Christian response to this question is something that offers both hope, and comfort to those who are experiencing it, which it is hard to find in a worldview that rejects the notion of God entirely.

We saw earlier that the existence of human reason is evidence of the supernatural. It is, therefore, completely reasonable to be open to the possibility that miracles have occurred. Whether any specific miracle, like the resurrection, has actually occurred, is now a historical question, and not a philosophical one, and depends on witness and evidence. That evidence is mainly contained in the New Testament to which we now turn.

7. Can you trust what you read?

Before we look at the evidence for the resurrection of Jesus, we need to ask about the reliability of the documents in which it is mainly contained—the New Testament. Popular opinion about the New Testament varies wildly. For instance, it never ceases to amaze me how many people will casually deny the existence of the historical figure of Jesus as recorded in the Gospels.

The real experts on such matters are the ancient historians, and, in the interests of fairness, we need to listen to them. Among them, whether they are Christians or not, there is a remarkable consensus regarding the existence of Jesus and the things that he did.

For example, Oxford scholar Christopher Tuckett, author of a Cambridge University text on the historical Jesus, says of the evidence:

> *All this does at least render highly implausible any far-fetched theories that even Jesus' very existence was a Christian invention. The fact that Jesus existed, that he was crucified under Pontius Pilate (for whatever reason) and that he had a band of followers who continued to support his cause, seems to be part of the bedrock of historical tradition. If nothing else, the non-Christian evidence can provide us with certainty on that score.[56]*

As for the New Testament, many people's opinions seem to be based on wild conspiracy theories, and they seem unaware of how overwhelmingly

strong the evidence for the reliability of the New Testament text actually is. The common views that the New Testament text is untrustworthy, or is invented much later than it claims to be, or is simply a fake, simply do not stand up to any serious examination.

MANUSCRIPTS

First, there is the vast number of manuscripts that we now have. There are nearly 6,000 partial or complete manuscripts of the New Testament in the original Greek language that have been catalogued, and over 18,000 in early translations into Latin, Syriac, Coptic, Arabic, and other languages. Added to this, there are thousands of quotations of the New Testament by the early Church Fathers, who wrote between the 2nd and 4th centuries. If, then, we lost *all* the New Testament manuscripts, from these quotations alone we could reconstruct a large proportion of the New Testament.

In order to get some idea of the weight of this manuscript evidence, one needs only to compare it with the documentary evidence available for other famous ancient texts. For instance, the Roman historian Tacitus wrote *The Annals of Imperial Rome* around AD 116. The first six books of *The Annals* survive in only one manuscript, which was copied in about AD 850. While books 7 to 10 do not survive, there are 35 manuscripts of books 11 to 16, the earliest of which is dated to the 11th century. The manuscript evidence is, therefore, very sparse, and the time gap between original compilation and the earliest manuscripts is over 700 years.

By contrast, the documentary evidence for the *History of Rome*, written by another Roman historian, Livy, around 20 BC, consists of nearly 500 manuscripts, the earliest of which is dated to the 4th century AD. The ancient secular work with the most documentary support is Homer's *Iliad* (written around 800 BC), of which there are over 1,900 manuscript copies, dating from around 415 BC. For both Homer's and Livy's work, the time gap between the original and the earliest surviving manuscripts is around 400 years.[57]

The main point to be made here is that scholars treat these documents as authentic representations of the originals in spite of the scarcity of the manuscripts and their late dates. In comparison with these, the New Testament is the best-attested document from the ancient world by far.

We have noted that the time lapse between the date of some well-known ancient manuscripts and the originals of which they are copies is considerable. By contrast, some of the New Testament manuscripts are of a very great age. The Bodmer Papyri (in the Bodmer Collection, Cologny, Switzerland) contain about two-thirds of the Gospel of John in one papyrus, dated as early as AD 200. Another 3rd-century papyrus has parts of Luke and John. Perhaps the most important manuscripts are the Chester Beatty Papyri, which were discovered around 1930 and are now housed in the Chester Beatty Museum in Dublin, Ireland. Papyrus 1 comes from the 3rd century, and contains parts of the four Gospels and Acts. Papyrus 2 contains substantial portions of eight of Paul's letters, plus parts of the letter to the Hebrews, and is dated to around AD 200. Papyrus 3 has a large part of the book of Revelation and is dated to the 3rd century. The dating of such documents is made by the most advanced scientific techniques.

COPYING ERRORS

Many people still hold that the New Testament cannot be reliable because it has been copied out so many times. This idea is without foundation. Take, for example, a manuscript that was written about AD 200, and is therefore now some 1800 years old. How old was the manuscript from which it was originally copied? We do not know, of course; but it could very easily have been 140 years old at the time it was copied. If that were so, then that manuscript was written out when many of the authors of the New Testament were still alive. Thus, we get from New Testament times to today in just two steps!

Furthermore, whereas there are copying mistakes in most manuscripts (it is virtually impossible to copy out a lengthy document by hand without

making some mistakes), no two manuscripts contain exactly the same mistakes. Therefore, by comparing manuscripts, it is possible to reconstruct the original text to a point where expert opinion holds that less than two per cent of that text is uncertain, with a large part of that two per cent involving small linguistic features that make no difference to the general meaning. Moreover, since no New Testament teaching depends solely on one verse or one passage, no Christian doctrine is put in doubt by these minor uncertainties.

Summing up the situation, Sir Frederic Kenyon, who was the Director of the British Museum and a leading authority on ancient manuscripts wrote:

> *The number of manuscripts of the New Testament, of early translations from it, and of quotations from it in the oldest writers of the Church is so large that it is practically certain that the true reading of every doubtful passage is preserved in some one or other of these ancient authorities. This can be said of no other ancient book in the world.*[58]

As for historicity, it turns out that Luke, the author of the Gospel of Luke and the Acts of the Apostles, was a brilliant ancient historian. The Roman historian A. N. Sherwin-White acknowledged that, although all sources have limitations and come from a particular perspective:

> *For Acts the confirmation of historicity is overwhelming … any attempt to reject its basic historicity even in matters of detail must now appear absurd.*[59]

THE WAY FORWARD

These observations about the text of the New Testament do not “prove” that what the documents say is true, of course. But they do establish the credentials of these narratives about Jesus as authentic historical documents which need to be taken seriously. To dismiss them as

fabrications not worth our time or attention would be to fail to follow where the evidence clearly leads. Indeed, it is important to refer to the great deal of work that has been conducted on the historicity of the New Testament.[60]

It is vital to grasp hold of the credentials of the documents upon which Christianity is based as we come now to examine what is perhaps the most crucial part of the Christian message.

8. How to disprove Christianity

In chapter 6 we saw that science does not make miracles impossible. That leaves us free to investigate the specific claim that lies at the heart of Christianity—that Jesus Christ rose bodily from the dead.

Perhaps the most astonishing thing about the resurrection of Jesus Christ in Christian thinking is that, from the very start, the leaders of the Christian community staked the whole validity of the gospel message upon it. The apostle Paul wrote:

> *And if Christ has not been raised, your faith is futile and you are still in your sins … we are of all people most to be pitied.* 1 Corinthians 15 v 17, 19

In other words, disprove the resurrection, and the whole of Christianity would disappear in a puff of smoke. Unlike most other religions and worldviews which are based on ideas or theories, Christianity claims to be falsifiable, based on this single historical claim. Disprove the resurrection of Jesus, and Christianity is dead.

APPLYING SCIENCE TO HISTORY

The resurrection is a unique past event, so we need to know how scientists approach such events. We could say, informally, that there are really two kinds of science: first, the kind we are most familiar with in school, where

we use repeated experimentation to verify our explanations—experiments that anyone else with the right equipment could repeat. We call this process *induction.*

However, such thinking does not work when we are studying unrepeatable events, like the volcanic eruption of Krakatoa in 1883, or the extinction of the dinosaurs, or the origin of the universe or life—or the resurrection. We cannot repeat these events to see what happened.

What we do with unique events is use the kind of forensic process familiar to us from detective stories. Hercule Poirot cannot re-run a murder to see who did it. Instead, he uses a reasoning process that runs like this:

- If suspect A was the murderer, then certain things, say X and Y, would follow.
- Poirot observes X and Y and deduces that suspect A is a good fit.
- However, he then notices a further fact, Z, and, thinking about it, concludes that A could not have caused Z.
- However, there is a further suspect B. If she did it, then X, Y and Z would have happened.
- Poirot deduces that B is a better candidate as murderer than A, and so on.

In the end, Poirot comes up with the explanation that fits all the facts and solves the case. We call this process *abduction*, or, inference to the best explanation. It is a process we are familiar with in many areas of everyday life.

It is exactly the same with the resurrection of Jesus. We cannot repeat it to see what happened, and so we must make an inference to the best explanation. That we now proceed to do.

There are four different aspects to consider:

1. The death of Jesus

There could be no resurrection if Jesus did not really die on the cross. We need, therefore, to be clear that he actually died. In fact, reports of his execution are to be found in a number of ancient non-Christian sources. Most scholars believe that Josephus (AD 37-100), a first-century Roman Jewish historian, wrote one of the earliest surviving accounts that mentions Jesus' crucifixion (excluding those produced by the New Testament authors).[61]

In the early second century, Tacitus (AD 56-117), a senator and historian of the Roman Empire, confirmed this, saying that Christ "suffered the extreme penalty [that is, crucifixion] during the reign of Tiberius at the hands of one of our procurators, Pontius Pilatus".

According to John's eyewitness account, Jesus was crucified with two others. The Jewish authorities did not want the bodies, which they regarded as defiling, to remain on the crosses on the approaching Sabbath. They therefore obtained permission from Pilate to have death hastened by the expedient of *crurifragium*; that is, breaking the legs of the men to make sure they would quickly die. However, the soldiers found Jesus was dead already, so they did not break his legs. Roman soldiers knew a dead body when they saw one. However, presumably to make doubly sure, one of the soldiers pierced his side with a spear.

John tells us that the spear-thrust produced a flow of blood and water This shows that massive blood-clotting had taken place in the main arteries, indicating that Jesus had died even before the spear-thrust. Since John could not have known the pathological significance of this, it is a powerful piece of circumstantial evidence of Jesus' death—a very clear scientific inference to the best explanation.

2. The burial of Jesus

According to the record, two members of the Jerusalem Sanhedrin (the Jewish ruling council), Joseph and Nicodemus, buried the body of Jesus in

a private tomb belonging to Joseph. In addition, other witnesses saw where the tomb was: the women from Galilee and the two Marys.

The fact of Jesus' burial in a tomb is important. If Jesus' corpse had simply been thrown into a common grave—as often happened to criminals—the determination of whether his body was no longer there would have been made very difficult, if not impossible. Furthermore, it was a new tomb, as yet unused, so there was no question of his body being accidentally confused with that of someone else. Moreover, since, as we have just noticed, some of the women believers followed Joseph, and saw the tomb in which Christ's body was laid, it makes it extremely unlikely that, when the women came early on the first day of the week while it was still dark, they mistakenly went to the wrong tomb.

Nicodemus and Joseph wrapped the body in linen cloths interlaced with around 35kg of spices in the ancient way of honouring an important person. They were clearly not expecting a resurrection. The weight of the spices, and the way in which the grave-cloths would have been tightly bound around the body, like an Egyptian mummy, make incredible the idea that Christ, having fainted from loss of blood on the cross, revived in the tomb, and then managed to escape.

The tomb was secured by Joseph with a large-flat stone that slotted into a groove at the entrance. It would have required several men to move it away. Also, acting on the authority of Pilate, the Jewish leaders had the stone officially sealed. Also, at the request of the Pharisees and with Pilate's permission, guards were placed around the tomb. Matthew tells us that this was to prevent the disciples coming, removing the body of Jesus, and fraudulently announcing a "resurrection".

3. The empty tomb

It is the unanimous testimony of the Gospels that the tomb was found to be empty when the Christian women came early in the morning of the first

day of the week, to complete the task of embalming Jesus' body. And when the apostles went to investigate, they also found the tomb empty.

This helps us understand what the early Christians mean when they claim that Jesus rose from the dead—that the body of Jesus that they had buried in the tomb, knowing it to be dead, had been raised from the dead and had left the tomb. However much that body was changed, they insist that it was the same body that they had placed in the tomb. It was not another, new, body, unconnected with the original body of Jesus.

According to Matthew, the first people to announce publicly that the tomb of Jesus was empty were the Jewish authorities, and not the Christians at all! They started a story circulating in Jerusalem to the effect that the disciples had stolen the body while the guards slept.

The question arises: are these Gospel accounts authentic? Some think they are a myth, invented long after the event. But that explanation is unlikely. Scholarly consensus is that the Gospels were probably written around AD 50-100,[62] by which time the facts about the crucifixion and burial of Christ would have been widely circulated in Jewish synagogues all over the Middle East. If the stories were a late invention, they would immediately have been seen as a recent fiction. Christians would not have risked telling such stories to Jewish communities if they were fabrications. There is, therefore, no reason to suppose that these narratives are not true.

The question now arises: why would the Jewish authorities have put their efforts into circulating such a story? One reason may have been to achieve a pre-emptive strike. They knew from the guards that the tomb was empty. They could see immediately that the Christians would publish this as evidence that Jesus was risen from the dead. So they decided to strike first by admitting that the tomb was empty and giving their explanation to counter the force of the inevitable Christian explanation.

As propaganda coming from the enemies of Christ, the circulation of this story is historical evidence of the highest quality *that the empty tomb of*

Jesus was a fact.

Just think about it. If the tomb had not been empty, the authorities would have had no difficulty in producing the body of Jesus, demonstrating conclusively that no resurrection had happened. When the apostles subsequently proclaimed that he had risen, they would have met with nothing but derision, and Christianity could never have got started.

Once more we have done exactly what forensic scientists would do—we have made an inference to the best explanation.

4. The grave-clothes

There is a further piece of evidence for the resurrection that shows that the disciples were capable of making such logical inferences. In John's account we read that, on being informed by the women that the tomb was empty, he and Peter ran to the tomb. John got there first, bent down, and looked inside. Immediately he noticed something strange: the linen grave-cloths that had been wrapped around the body of Jesus were still there. Stranger still, they were lying just as they had been when his body was in them, but the body had gone.

Peter caught up with John, who must therefore have been the faster runner (one of those little details that give the narrative the ring of eyewitness writing). Both of them went into the tomb and saw what was possibly the strangest sight of all: the cloths which had been wrapped around Jesus' head were lying on the slightly elevated part of the ledge within the tomb; and, though His head was no longer in them, they were still wrapped round as if it had been, except that they had probably collapsed flat.

The effect on John was powerful: he saw and believed.[63] This does not merely mean that he now believed what Mary had said: from his first glimpse into the tomb it was obvious that the body was missing. It was much more than that. He made the rational deduction that something very

mysterious indeed must have happened. It looked as if the body of Jesus had come right through the grave-cloths and left them exactly where they were when the body was inside. John had no doubt that he was seeing the evidence of the supernatural.

What was it about the grave-cloths that carried such convincing power? The obvious question for him or for anyone else to ask is: *how did they get to be like that?* Tomb-robbers would not have taken the corpse, and left the valuable linen and spices. And even if, for some unfathomable reason, they had wanted only the corpse, they would have had no reason whatever for wrapping all the cloths round again as if they were still round a body, except, perhaps, to give the impression that the tomb had not been disturbed. But if they wanted to give that impression, they would surely have done better to roll the stone back into its place! The noise would have been considerable. The rolled-away stone was a complete give-away that the tomb had been disturbed. It was an open invitation to come and have a look inside. But here we meet another matter: how could any tomb-robber have removed the stone when the guard was there?

Alternative theories

If it wasn't tomb-robbers, then, who could it have been? Perhaps misguided followers of Jesus, trying to get the body away from under the noses of the authorities to a safer place? But if they had done that, they would not have kept it secret from the other apostles. They would have reburied him reverently (as Mary was intending to do),[64] and eventually all the Christians would have come to know where his tomb was. In any case, we are still left with the noisy problem of rolling away the stone within earshot of the guard.

Could someone have taken the body and rewound the cloths deliberately to give the impression that a miracle had happened? Who could this have been? It was morally impossible for the followers of Christ to have done it. It was also psychologically impossible, since they were not expecting a resurrection. And it was practically impossible, because of the guards.

Finally, it would be absurd to think of the authorities doing anything remotely suggestive of a resurrection. After all, it was they who had ensured that the tomb was guarded to avoid anything like that!

For John and Peter, it was an electrifying discovery. Like Sherlock Holmes, they had ruled out impossible explanations and were left with only one alternative: that the body had come through the grave-cloths. It was a further clear example of making an inference to the best explanation in the best tradition of forensic science.

But what did that mean? And where was Jesus now?

Historian Michael Grant of Edinburgh University writes:

> *True, the discovery of the empty tomb is differently described by the various Gospels, but if we apply the same sort of criteria that we would apply to any other ancient literary sources, then the evidence is firm and plausible enough to necessitate the conclusion that the tomb was, indeed, found empty.[65]*

Peter and John left the empty tomb. They thought there was nothing more to be gained by remaining there. However, as events proved, they were wrong.

4. Eyewitnesses of the appearances of Christ

The early Christians did not simply assert that the tomb was empty. More important was the fact that subsequently they had met the risen Christ, intermittently over a period of forty days culminating in his ascension.[66] They had actually seen him, talked with him and touched him, and had even eaten with him. It was nothing less than this that gave them the courage to confront the world with the message of the Christian gospel. Indeed, the fact that they had personally seen and met the risen Christ was an important and integral part of that gospel. The evidence for this is so strong that even atheist scholar Gerd Lüdemann deduces:

> *It may be taken as historically certain that Peter and the disciples had experiences after Jesus' death in which Jesus appeared to them as the risen Christ.[67]*

Not surprisingly, Lüdemann's atheism forbids a resurrection as the cause, and so he holds that the appearances were visions.

However, this view is refuted by evidence from psychological science. Once more, notice that the reasoning processes are perfectly scientific.

a. Visions and hallucinations usually occur to people of a certain temperament, with a vivid imagination. The disciples were of very different temperaments: Matthew was a hard-headed, shrewd tax-collector; Peter and some of the others, tough fishermen; Thomas, a born sceptic; etc. They were not the sort of people one normally associates with susceptibility to hallucinations.

b. Hallucinations tend to be of expected events. Philosopher William Lane Craig points out that "hallucinations, as projections of the mind, can contain nothing new".[68] But none of the disciples were expecting to meet Jesus again. The expectation of Jesus' resurrection was not in their minds at all. Instead, there was fear, doubt and uncertainty—exactly the wrong psychological preconditions for a hallucination.

c. Hallucinations usually recur over a relatively long period, either increasing or decreasing. But the appearances of Christ occurred frequently over a period of forty days and then abruptly ceased. None of those first disciples ever claimed a similar experience again. The only exceptions were Stephen and Paul. Stephen, the first Christian martyr, in the moments before he was stoned to death, exclaimed: "Behold, I see the heavens opened, and the Son of Man standing at the right hand of God."[69] Paul records having met the Risen Christ once, and that he was the last to do so.[70] This pattern is not consistent therefore with hallucinatory experiences.

d. It is difficult to imagine that the five hundred people who saw him at one time were suffering from collective hallucination.[71] Indeed, Gary Sibcy, a clinical psychologist comments:

> *I have surveyed the professional literature … written by psychologists, psychiatrists and other relevant health care professionals during the past two decades and have yet to find a single documented case of a group hallucination, that is, an event in which more than one person purportedly shared in a visual or other sensory perception where there was clearly no external referent.*[72]

e. Hallucinations would not have led to belief in the resurrection. Hallucination theories about Jesus' resurrection are severely limited in their explanatory scope: they only attempt to explain the post-crucifixion appearances of Jesus. Such theories obviously do not account for the empty tomb—no matter how many hallucinations the disciples had, they could never have preached the resurrection in Jerusalem, if the nearby tomb had not been empty!

THE FIRST WITNESSES

To all of this we should add the fact that for anyone who knows anything about the ancient laws regarding legal testimony, it is remarkable that the first reports mentioned in the Gospels of appearances of the risen Christ were made by women. In first-century Jewish culture, women were not normally considered to be competent witnesses. At that time, therefore, anyone who wanted to invent a resurrection story would never have thought of commencing it by mentioning the testimony of women. The only value of including their witness would be if it were true and easily checked, whatever people thought of the fact that it figured women as witnesses. The very inclusion of the women's testimony, therefore, is another indicator of historical authenticity.

The existence of the Christian church throughout the world is an indisputable fact. What explanation is adequate to explain the transformation of the early disciples? From a frightened group of men and women—utterly depressed and disillusioned at what they perceived to be the calamity that had befallen their movement when their leader was crucified—there suddenly exploded a powerful, international movement which rapidly established itself all over the Roman Empire and ultimately all over the world. And the striking thing is that the first disciples were all Jews: from a religion not noted for its enthusiasm in making converts from other nations. What could have been powerful enough to set all of this going?

If we were to ask the early Church, they would answer at once that it was the resurrection of Jesus.[73] Indeed, they maintained that the very reason and purpose for their existence was to be a witness to the resurrection of Christ. That is, the church came into existence not to promulgate some political programme or campaign for moral renovation; but primarily to bear witness to the fact that God had intervened in history, raised Christ from the dead, and that forgiveness of sins could be received in his name. This message would ultimately have major moral implications for society; but it was the message of the resurrection itself that was central.

If we reject the first Christians' own explanation for their existence, on the basis that it involves too big a miracle, what are we going to put in its place that will not involve an even greater strain on our capacity for belief? To deny the resurrection simply leaves the church without a *raison d'être*, which is historically and psychologically absurd.

Professor C. F. D. Moule of Cambridge writes:

> *If the coming into existence of the Nazarenes, a phenomenon undeniably attested by the New Testament, rips a great hole in history, a hole the size and shape of the Resurrection, what does the secular historian propose to stop it up with? … the birth and rapid rise of the Christian Church therefore* ***remain an unsolved enigma***

for any historian who refuses to take seriously the only explanation offered by the Church itself. *[74]*

In this brief survey we have only been able to give a flavour of the depth and breadth of evidence that is available for the resurrection of Jesus. If you are interested in more detail, take a look at the final two chapters of the my book *Gunning for God*.[75]

CHRISTIANITY IS FALSIFIABLE

Critics have been desperately attempting to discredit the resurrection for 2,000 years, and have failed, because the evidence is simply too strong. The question that remains, therefore, is this: will we follow where the evidence leads or not?

But now our investigation must take a more serious, and perhaps dangerous path for you: one that explores not just the experiences and claims of others but *your own* experience.

9. The personal dimension

Up to this point, we have been thinking of those first Christians who saw the risen Jesus. Yet the vast majority of Christians throughout history have become Christians without literally seeing Jesus. Christ said something very important about this to Thomas and the others:

> *Because you have seen me, you have believed; blessed are those who have not seen and yet have believed.* John 20 v 29 (NIV)

They saw and believed—but most have not seen. This, of course, does not mean that Christ is asking all the rest of us to believe without *any* evidence. Seeing is only one kind of evidence that is available to us. The same is true in ordinary life—we all believe in many things that we have not seen: love, atoms, gravity and the earth's molten core. We do not believe these things without evidence though. It is just that we do not have the evidence of sight.

EVIDENCE AND RELATIONSHIP

Indeed, the verse just quoted about Thomas comes directly before John's explanation of his motivation for writing, a statement we have already had occasion to quote:

> *Now Jesus did many other signs in the presence of the disciples, which are not written in this book; but these are written so that you*

> *may believe that Jesus is the Christ, the Son of God, and that by believing you may have life in his name.* John 20 v 30-31

The evidence that is offered to us first of all is the eyewitness evidence of those who did see. John is writing to convince us (who have not seen) of certain facts—that Jesus is who he claimed to be: the Christ (= Messiah), the Son of God (God incarnate, the Word become human). But John is not only concerned that we come to believe these facts; he is also concerned that, on the basis of those facts, we come to trust in Jesus as a person, so that we can experience the wonder of receiving a new kind of life that Jesus himself called "eternal life".

It is one thing to believe certain facts about a person. It is a very different thing to meet that person and come to trust them as a friend. I know a lot of facts about Winston Churchill, but I never met him; he was never someone who I could call a friend. And even if I had met him, he could never have given me his life. What the apostle John promises to those who believe in Jesus is a personal living relationship with God through Jesus Christ that is unique.

Once we begin to talk about personal relationships, we leave science behind. But we do not leave rationality behind. There is a fundamental difference between scientific knowledge and personal knowledge. Imagine that I wish to get to know you. I can make many different kinds of measurements associated with your body—height, weight and so on. I can scan your body using an MRI and get to know a lot about your internal organs. I can even scan your brain and detect which areas are active at the moment. But just as science or technology could not even determine why Aunt Matilda had made her cake, any or all of these investigations will never enable me to get to know you. I shall never get to know you unless you reveal yourself to me, usually by speaking.

Yet in the process of you revealing yourself to me, rationality is involved at a very high level. I have to use my mind to understand what you say—and you have to use yours to understand me.

It is similar with God. Since God is a person and not a theory, we can only get to know him if he reveals himself to us. The central claim of the Bible is that God has spoken. He has revealed aspects of his glory to us in the splendour of the universe; he has spoken to us over the centuries in many and various ways as recorded for us in the Bible. But most specifically of all, he has spoken to us in his Son.

> *Long ago, at many times and in many ways, God spoke to our fathers by the prophets, but in these last days he has spoken to us by his Son, whom he appointed the heir of all things, through whom also he created the world. He is the radiance of the glory of God and the exact imprint of his nature, and he upholds the universe by the word of his power.* Hebrews 1 v 1-3

And what is the central message that God has spoken through Jesus Christ? The first clue is given by his name:

> *You shall call his name Jesus, for he will save his people from their sins.* Matthew 1 v 21

Now in the words of Jesus himself:

> *Even the Son of Man came not to be served but to serve, and to give his life as a ransom for many.* Mark 10 v 45

> *"Thus it is written, that the Christ should suffer and on the third day rise from the dead, and that repentance for the forgiveness of sins should be proclaimed in his name to all nations, beginning from Jerusalem. You are witnesses of these things."* Luke 24 v 46-48

And that is precisely what the early Christians did. They went out and urged people to turn away (repent) from their old way of living, and told them that as they put their trust in Jesus, they would receive forgiveness.

Listen to the apostle Paul as he declares this message to the thinkers in Athens:

> *We ought not to think that the divine being is like gold or silver or stone, an image formed by the art and imagination of man. The times of ignorance God overlooked, but now he commands all people everywhere to repent, because he has fixed a day on which he will judge the world in righteousness by a man whom he has appointed; and of this he has given assurance to all by raising him from the dead.* Acts 17 v 29-31

Christianity not only asserts the facts that Jesus died and rose again. It says that these events have implications for all of us, and it challenges us to do something about them.

Science can raise serious moral issues for our consciences that require action. For instance, science has informed us about global warming, the pollution of the atmosphere and the dangers of plastics in the oceans. Our consciences tell us that we need to do something about these issues for future generations. But morality must take us *beyond* science; it points to something much bigger and more fundamental—our relationship with God. This is a moral issue of such magnitude that its remedy requires the death of Jesus Christ, God's Son.

UNDERSTANDING OURSELVES

If you are honest with yourself, you will be aware that sin is like a cancer: it messes up our lives and eats up the possibility of real peace, joy, and happiness. There is a brokenness in people in general, and if we are honest, in ourselves as well.

Psychologists and evolutionary biologists try to explain why this is and offer answers, some more convincing than others. But none of them offers an explanation or an answer that chimes as deeply with our instincts and

feelings about our lives as does Christianity. The reason Christianity has so much to say about the matter of sin is not because of a morbid preoccupation with guilt. It is because Christianity offers us a realistic diagnosis of the problem of human sin, and a remedy to it that brings new, satisfying and meaningful life with it.

Therefore, before we dismiss Christianity, we would surely be wise to consider what exactly this diagnosis and remedy are. The biblical diagnosis is given to us in the Genesis account of the Garden of Eden, one of the most famous stories in all of literature. It is also one of the most profound. It relates how the Creator placed the first humans in a garden paradise that was full of promise and interest. They were free to enjoy the garden and explore it and the regions around it to their hearts' content. However, one fruit was indeed forbidden them by God—the "tree of the knowledge of good and evil" (Genesis 2 v 17). Yet, far from diminishing the status of humanity, that prohibition was essential to establish the unique dignity of humans as moral beings.

In order for morality to be real, humans must have a certain degree of freedom. For in order to be moral beings, there must exist a real moral choice between right and wrong. There must be a moral boundary. So, one fruit was forbidden. They were free to eat from any tree in the garden—except one. God told them that in the day they ate it, they would surely die.

This ancient story then relates how the serpent-enemy misrepresented God, suggesting that God was taunting human beings, by placing them in a magnificent environment with its beautiful trees and luscious fruit and then forbidding them to eat that fruit. The enemy also insinuated that God wished to limit human freedom by not letting the humans become as God. The deception worked.

The "original" sin that infected the human race from its very start was a revolt of the human spirit against the God who created it—a revolt that changed the attitude of the creature to their Creator, to other humans and to the creation around us. As soon as the first humans took the forbidden

fruit, they experienced shame and unease, and, above all, alienation from God. The death of their relationship with God would be followed inevitably, but not immediately, by physical death. The man and woman who had enjoyed the joy and friendship of God, now felt that God had become their enemy, and they fled to hide from him.

ON THE RUN

We humans have likewise been fleeing ever since. There has lurked in the human heart the suspicion that God, if he exists at all, is innately hostile to us. He forbids us the enjoyment of natural pleasures and represses us psychologically. He restrains us from developing our full human potential. Perhaps you are thinking these very thoughts now—imagining that God is a tyrant and a bully, and that he is to blame for everything.

Even a superficial glance at the text of Genesis shows that this complaint rests on severe distortion. God certainly created Adam to be curious but not discontented. The first humans were not prevented from slaking their curiosity. The very reverse is true: they were surrounded by a whole world of possibilities. God encouraged them to engage in the fascinating task of naming things—in their case, the animals—a task that is of the very essence of science. God wanted them to explore his universe and to discover the treasures of his wisdom.

As for the “forbidding”, note that only one thing was forbidden and that particular fruit was forbidden, not to restrict humanity but so that they could develop a relationship of trust with the Creator. They really could choose whether to trust the Creator and believe his word or grasp at what they imagined would come to them by asserting their independence of him.

The biblical diagnosis, then, is that we have inherited a nature that is sinful and then have proceeded to sin on our own account. We are, on all sides, influenced and pressured by the prevailing ethos of a fallen world. As the New Testament puts it, “All have sinned and fall short of the glory

of God" (Romans 3 v 23). However, this seems grossly unfair to many people. They say, "We did not ask to be born from a race that has been damaged at its root. Why should we be condemned as a result of what somebody else originally did?" The answer to this reasonable objection is given in a subsequent statement by St Paul in the very same letter: "For as by the one man's disobedience the many were made sinners, so by the one man's obedience the many will be made righteous" (Romans 5 v 19).

Because we were not personally responsible for the entry of sin into the world, we are not personally in a position to rectify the whole situation. That is why the salvation offered for human sin in the New Testament makes sense, because it (alone) is commensurate with the scale of the problem. Since we were made sinners by what some other person did, rescue and redemption is offered to us freely on the very same terms: through what Another Person has done, rather than by what we ourselves can do. It is this that Jesus claimed he had come to do:

> *For even the Son of Man came not to be served but to serve, and to give his life as a ransom for many.* Mark 10 v 45

Because they do not realise how serious the problem is, many people seem to find the principle of vicarious suffering difficult to grasp, and, as a result, misunderstanding abounds. One reason for that is another repercussion of human alienation from God: the widespread notion that we can merit God's acceptance by the piling up of our good deeds. After all, many things in life depend on merit—gaining a college qualification, a job, promotion, and so on.

In consequence, many people think that "salvation", if it means anything at all, is simply some sort of religious code that we have to keep to earn God's acceptance, like the moral precept of loving your neighbour as yourself or following certain prescribed rituals and ceremonies. That leads to them trying hard to keep that code for a while, only in the end to find that attempting to do so can be a very unpleasant type of slavery. They then conclude (correctly, in fact) that the venture is hopeless, and they give up.

They think that they have understood Christianity, tried it and found it doesn't work, and rejected it.

CONVERSATION ON A TRAIN

The main difficulty here is the concept of "religion". I have tested this by asking many people what they think a religion is. The general consensus is that religion is a way of relating human beings to something beyond themselves, something transcendent, using teaching, rituals and ceremonies. A religion usually consists of rituals of initiation, a path to be followed on the basis of prescribed teaching, and an entry into the world to come based on merit gained on the path.

I vividly recall discussing this in a very unusual set of circumstances. I had been lecturing in a church in northern Hungary and was on my way by train via Budapest in order to catch a flight home from Vienna. I found my reserved seat in a second-class carriage and sat down. At once I began to feel uneasy about the seat—an experience I had never had before. I first thought that I was in the wrong seat but a check on my ticket showed that was not the case. It then occurred to me that I should go and sit in first class. This conviction became so strong that I got out of the carriage and walked to the front of the train and found there were two first-class carriages—one was shabby and old, and the other seemed brand new. As the train was about to leave, I tried to get into the shiny new carriage but bizarrely found I could not move one leg in front of the other. I began to panic, thinking I was having some kind of seizure. But when I turned towards the shabby carriage I found I could move, and so I dived in just as the train pulled out of the station.

I just about fell into the seat near the door of the compartment since the two window seats were occupied. At once I felt relaxed and normal again but very puzzled by what had happened.

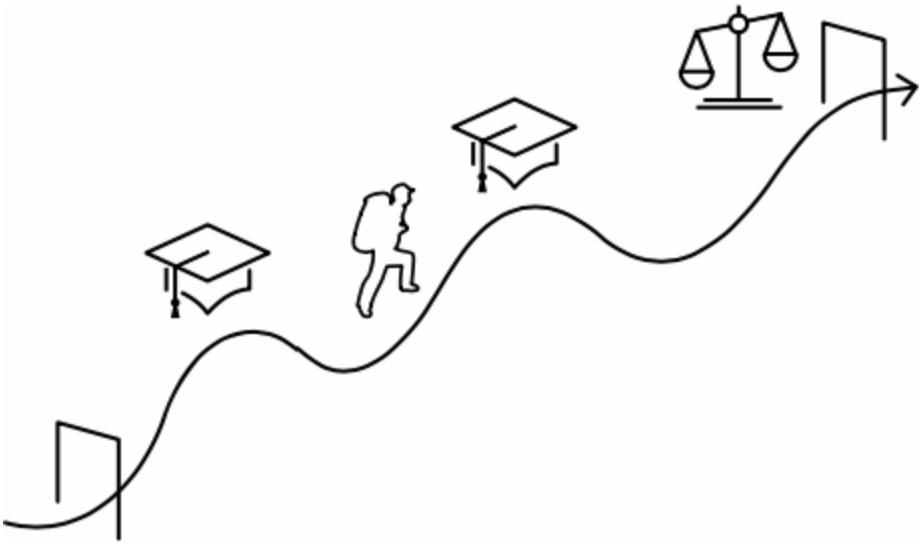
I closed my eyes to get some rest and became aware of the two men in the window seats speaking quietly to each other in a language I could not understand. After a while they changed to French, which I could understand and speak, so I wished them good day and we chatted a little about our respective jobs. They were both senior international lawyers: one an ambassador, the other a judge from an international court. I explained I was a mathematician.

The conversation lapsed and I was beginning to doze off when one of them suddenly said, "*Voyez les croix!*" ("Look at the crosses!"). He indicated a cemetery through the window and then asked no one in particular, "Are there any Christians in this country?" I replied by telling them that there were indeed many Christians, and I had been spending a week with some of them, teaching them from the Bible.

"But that is not rational," came the reply. "You are a mathematician; how can you possibly take the Bible seriously? And, in any case, we can approach God directly, even in the desert. We don't need intermediaries like Jesus and Mary to help us."

After more conversation, during which I said that my Christian faith was evidence-based the other man said this: "Look, we have another three hours on this train. Would you be prepared to explain to us the difference between Christianity and our religion?"

I asked them what the essence of their religion was and then I looked around for paper and pen to illustrate my answer. Not finding any, I noticed that the floor of the carriage was quite dusty and so I drew the diagram below with my finger in the dust asking: "Would it be fair to say that your religion amounts to this?"



“There is a door of initiation at the beginning, perhaps a ceremony of some kind, or it might even be your birth into a particular group, that leads to your starting a path or way indicated by the wavy line. You have people to teach and guide you (indicated by the academic hats), and the path goes up and down according to your success in following the path. You then come at death to a final assessment, indicated by the scales of justice where your life is scrutinised; and whether you are permitted to advance into a glorious world to come depends on your good deeds outweighing your bad ones.

“Since it is a merit-based system, no matter how good your teachers, advisers, gurus, imams, priests or rabbis are, they cannot guarantee success at the final assessment. In other words, it is very like a university course: you have to satisfy certain initial requirements, you follow the course and then sit the final examinations. No matter how good and kind your professors and teachers are, they cannot guarantee you a degree since that depends entirely on your merit at the final exams.”

The two men agreed that this was not only what they believed but that it was what *all* religious people believed—that it was the essence of religion. Not only that, but they also agreed that religions had a great deal of moral teaching in common.

“Well, then,” I said, “that means that I am not a religious person”.

“But you said you were a Christian,” they replied.

“Yes, I am a Christian, and what I now need to say is in direct answer to your original question: what is the difference between what I believe and what you believe? But let me say first that I agree with you that there is much moral teaching in common. Take, for example, what is often called the ‘Golden Rule’, one version of which says, ‘Treat others in the same way you would like them to treat you’. You will find that in every religion and philosophy under the sun, including those religions and philosophies that do not believe in gods of any kind.

“The differences arise in what religions have to say about how you relate to God or the gods. My illustration shows the common view that you share with many others. However, the Christian message is very different. It does not consist in a merit-based acceptance by God at the final judgment. Christianity teaches something utterly radical at this point. It tells us that we can be accepted at the beginning of the path. It teaches that the initial step is not a rite or ritual or ceremony performed on an infant or adult, but it is a step of commitment to a person, Jesus Christ, that involves believing that he is God incarnate, who has come into the world to give his life as a ransom for our sins, which alienate us from God.”

At this point I drew a cross in the doorway at the beginning of my sketch in the dust on the floor.

“Now,” I said to them, “if you want my answer to your question, please listen and try to understand it before passing judgment on it.”

“Carry on,” they said.

“Here is what Jesus said: ‘whoever hears my word and believes him who sent me has eternal life. He does not come into judgment, but has passed

from death to life.' (John 5 v 24). The context is the astounding claim by Jesus that he is going to be the final Judge of humankind."

I turned to the judge in the window seat. "Mr Judge," I said, "suppose I presented my case to you, and you declared me to be free; would I be right to believe you?"

He showed a burst of indignation: "Of course" he said, "I am the judge, the final assessor, and if I say you are free, then you are free."

"Well, that is exactly it," I replied. "Jesus is the highest- level judge in the universe. And he says that if we trust him personally, he will declare us to be right with God on the grounds that he has himself paid on the cross the penalty of the guilty verdict that our sins have merited. Moreover, the evidence that this is true is, as the early Christian apostle Paul said to the philosophers at Athens, that God has given assurance to all that this is so by raising Jesus from the dead."

There was silence in the carriage for quite a while and then the ambassador said to the judge, "There is a great difference between Christianity and what we usually think of as religion". Turning to me he said, "And it all depends on who Jesus Christ really is".

"Exactly," I replied.

They then told me the following story. That weekend they had been attending a high-level conference in Vienna and found they had a day free. They asked for an embassy car to take them to Budapest and, after spending most of the day there, they started on the return journey. Their car broke down just outside the train station. They had no option but to take the train.

"We don't travel by train," they explained, "We haven't been in one for years."

“Then we meet you on the train and have a conversation of a kind we have never experienced, not even in the leading universities in the world that we have attended. How do you account for that?”

“Very simply,” I replied, “I think there is such a thing as divine guidance and this is an example of it.”

I relate this story not just to help us see the difference between conventional views of religion and the heart of the Christian message. I have told it to make another important point. You see, God does not just “exist” in an academic, philosophical way. He is alive and active in the world, working in our lives, reaching out to us, speaking to us through creation and ultimately through his Son Jesus Christ. I have had far too many “coincidences” in my life to put down to blind luck; this was just one of many.

And you, dear reader, find yourself reading this book. You may have been given it by a friend, or picked it up at random. You may have deep questions about God, or you may simply be intellectually curious. Can I be so bold as to suggest that you are reading this for a reason? That the God of the universe has put you where you are, with this book in your hand, so that you might, perhaps, reach out to him?

Perhaps you, like so many others, have a false view of God and how we relate to him, and this is his way of alerting you to this fact. It is worth thinking about.

HOW WE RELATE TO GOD

I have often used the picture[76] that I drew on the floor of the train, and I sometimes reinforce its message by amplifying it with another. Imagine that I meet a girl, fall in love with her and decide to propose to her. I approach her and give her a gift-wrapped parcel. She asks what it is, and I tell her to open it and I will explain. She finds in it a popular cookery book.

She expresses appreciation, and I then say to her that the book is full of rules and instructions on how to do excellent cooking. Now, I really like her and would like her to be my wife; and so I say to her that if she keeps the rules and instructions and cooks for me to a very high standard for, say, the next 40 years, then I will think about accepting her. If not, she can go home to her mother!

It is a ridiculous scenario of course, and if she threw the book at me and never spoke to me again, I would be getting far less than I deserved. Why? Because my proposal is insulting to her as a person in the extreme. It suggests that I am going to wait for years to see how she performs in the kitchen before accepting her.

We would never dream of treating someone like that. That is not how relationships are formed. Yet, the remarkable thing is *that this is precisely the attitude many people take towards God*: they try to pile up their merit in the hope of one day gaining God's acceptance, as in my illustration of the wavy path. Anyone can see this method doesn't work with our fellow men and women. It won't work with God, either, since God is the person in whose image we are made. And it is often our pride that hides this from us. It is remarkable how many people seem to be prepared to work for God to earn their salvation, yet they are not prepared to trust him.

It is worth emphasising once more: according to Christianity, "salvation" means exactly that—action on the part of God to rescue those who could not help themselves. At its heart is the magnificent doctrine of the grace of God. It says that, if they will, anyone can be forgiven and find a new life and friendship with God—whoever they are; whatever they have done.

FINDING GOD'S FORGIVENESS

This brings us to another essential ingredient in the Christian message which I mentioned in my illustration to the lawyers on the train: that Jesus will be the final Judge.

Christ himself claimed that role during his life on earth and said this about how the judgment would operate:

> *For God did not send his Son into the world to condemn the world, but in order that the world might be saved through him. Whoever believes in him is not condemned* … John 3 v 17-18

People who think they can gain acceptance with God by their merit are clearly not aware of how they stand in view of God's judgment. For all of us know that we fall short, sometimes very far short, of our own standards let alone God's standards. The more we take God's law seriously, the more we see just how sinful we are. And yet many people hope that when it comes to judgment, God will not take his standards too seriously, but will have a relaxed attitude and gloss over our misdeeds and accept us. That is to fail to see that God's holiness cannot and will not be compromised. His standard is perfection, so the person who "keeps the whole law but fails in one point has become accountable for all of it." (James 2 v 10). Saying that is not fair is like saying that it is not fair if only one link in the chain that connects a ship to its anchor breaks, so that the ship goes adrift and is lost. It is in the nature of the relationship that this is so.

The only way to avoid judgment, as Christ in his love tells us, is to cease trying to gain acceptance by merit and instead trust Jesus for salvation. Let me repeat: acceptance with God does not depend on attainment of a standard of perfection that is, in any case, humanly impossible to attain. The good news is that the salvation by which God is prepared to accept us, as the New Testament repeatedly says, is given by God's grace as a gift: "It is the gift of God, not a result of works, so that no one may boast" (Ephesians 2 v 8-9).

However, like all gifts, it has to be received. This is not automatic; it involves repentance and putting our trust in God as a deliberate act of our will. The logic of this is important: since the original human rebellion against God involved lack of trust and grasping at independence, the way

back inevitably involves repenting of that attitude, trusting God and learning to depend on him. It involves:

1. Repentance—that is, having a change of heart and mind in realising that we are sinners, who have offended God; and agreeing with God's verdict on the sin in our lives, which has damaged us; turning away from our sin; and realising that Jesus took upon himself the judgement we deserved.

2. Faith—that is, receiving from Christ in a deliberate act of commitment and trust the gift of salvation that we could not earn or provide for ourselves.

Some react by arguing that this cannot be true, for if salvation does not depend on our merit we can carry on merrily living as we like and God will still accept us. Not so. The person who takes that attitude shows that he or she has not begun to understand what repentance means. There is no salvation for anyone who intends to keep on sinning.

For, as with marriage—where, as we said above, acceptance occurs at the beginning of the relationship—so with Christ; it is exactly the same. We are accepted the moment we repent and trust him. Thereafter, we wish to live to please him, not in order to gain acceptance but because we already have it. To do otherwise shows that we have never understood what salvation really means.

By saying, "It all depends on who Jesus is", my conversation partner in the train that day in Hungary had grasped that the heart of Christianity is the person of Jesus Christ. Its message only makes sense if he is the one he claimed to be: God incarnate, the Saviour. That is a stupendous claim, and that is why in this book we have adduced evidence for the truth of that claim from a wide variety of sources.

In this chapter, we may seem to have moved away from the scientific considerations of earlier on, and, indeed, in one sense we have. And yet, not quite. First, because we have proceeded like all science does by the method of rational enquiry. Second, because we are now in a position to

see how Christianity fares when we apply a very scientific concept to it—*testability*.

There remains one final step in our journey of discovery...

10. Entering the laboratory: Testing the truth of Christianity

In science, the testing of new ideas, hypotheses and theories plays a very important role. For instance, when an aerospace engineer designs a new aircraft, a prototype is built and thoroughly tested, inspected and re-tested to ensure it can be trusted to carry hundreds of passengers around the world in safety.

In light of this, I am often asked how I can be a scientist and a Christian since everything in science is testable but nothing in Christianity is. Again, this comment betrays a fundamental misunderstanding of both science and Christian believing. First, we must remember that some important scientific theories have not yet been tested—for instance, the late Stephen Hawking's prediction that black holes radiate. It is widely thought that anyone who devises a test that confirms his prediction would win a Nobel Prize.

Second, Christianity *can* be tested. We have already been doing quite a bit of that at the factual level, in thinking about the way in which the Christian message stands up against an atheistic worldview, in discussing the reliability of the biblical documents, and in probing the evidence for the resurrection.

Christianity is also eminently testable at the personal level. If it were not, I, for one, would just not be interested in it. How can we test it? Think of

what Jesus promises to those who repent of their sin and trust him for salvation—peace with God, forgiveness, a new life with new powers and desires and opportunities, new fellowship and friendship with God, a deep love for a new community of Christians, new avenues of service, and potential for human flourishing, as well as resources to cope with life's pain and suffering—all of it flooding life with new meaning.

It is not difficult to put that to the test.

First, you can read the New Testament and see what effect the message that Jesus and the apostles brought had on those who engaged with them—taking love to the unloved, bringing sanity to the mentally unstable, health to the diseased, new hope to the hopeless and salvation to the lost.

And what happened then still happens now.

A SHOUT FROM THE GALLERY

Some time ago I was lecturing in a major US university, speaking about the credibility of Christianity. Immediately after I had finished, up in the balcony, a Chinese student stood up and loudly cried, "Look at me!" It was quite startling and we all looked. I addressed him and said, "Why should we look at you?" His reply went something like this: "Six months ago my life was in a mess: I had no peace and I saw no way out. I was taken to a lecture you gave at another university, and something you said triggered a response in me. A few weeks later I gave my life to Christ. Just look at me now!" He was radiating a joy that all of us could see. He had tested Christianity and found it to be true.

That kind of story can be repeated again and again in the lives of all kinds of people: drug addicts and managing directors; plumbers and police officers; scientists, students and street sweepers. And in the true spirit of scientific investigation, each repetition adds to the evidence that Christianity is true.

It often happens like this. We meet someone and they tell us about their problems with relationships, money, maybe alcohol and drugs, stress, depression and innumerable other things. We then bump into them some time later and find them completely transformed—their marriage is back together, alcohol and drugs are replaced with food on the table, their tempers have improved, and they have an obvious sense of well-being and meaning in their lives. We ask what happened. The answer may take different forms:

I met Christ.

I realised there was no way out and someone explained the Christian message to me and I turned from my bad ways and trusted Christ.

I read the New Testament and was inwardly convicted of its truth, and so I turned to Christ.

I became a Christian.

When one sees this happen again and again, it is not hard to add two and two and get four. For at the level of experience, there is overwhelming evidence of the transforming power of Christ in the lives of those who turn to him for salvation.

BEYOND SCEPTICISM

The Greek word from which "sceptic" derives is *skeptein,* which means "to check out from a distance". And it is important to do that in order to avoid being deceived. That is why we have spent so much time in this book checking things out—reasons, arguments, ideas, evidences. But there comes a point, after we have checked out as much as possible, when we have to give up our distance in order to make progress.

You will never get to know me or anyone else if you remain at a distance. If you wish to get to know me, you will have to take the step of giving up your distance and engage with me in conversation. You cannot even know what a relationship is without engagement. It is the same with God. We can and must check things out from a distance, but that is just a first step. In order to gain final evidence of the truth of Christianity we have to give up that distance and repent and trust Christ.

I took that step over 60 years ago and have proved Christ's promises true in every avenue of my life: in my family, in my professional life, and in articulating the Christian message for the wider community. But my experience will not do for you. You can and must experience this transformation yourself.[77]

THE ULTIMATE EXPERIMENT

Can science explain everything? I think it is abundantly clear that it cannot.

Do science and Christianity mix? Yes, I hope I have shown you that they mix very well. We should not forget, however, that science, fascinating though it is, is simply the investigation of the world around us. Christ is the one who brought our world and ourselves into being. It is hard for us to grasp the magnitude of this. This is what the apostle Paul says:

> *He is the image of the invisible God, the firstborn of all creation. For by him all things were created, in heaven and on earth, visible and invisible, whether thrones or dominions or rulers or authorities —all things were created through him and for him. And he is before all things, and in him all things hold together. And he is the head of the body, the church. He is the beginning, the firstborn from the dead, that in everything he might be preeminent. For in him all the fullness of God was pleased to dwell, and through him to reconcile to himself all things, whether on earth or in heaven, making peace by the blood of his cross.* Colossians 1 v 15-20

To fail to get to know him is to miss life’s ultimate purpose and joy. But his message to you is that, because of what he has done, you don’t have to miss out on anything at all.

OTHER BOOKS BY JOHN LENNOX

- *God's Undertaker: Has Science Buried God?* (Lion, 2009). In this book I deal in detail with the arguments of Richard Dawkins in *The God Delusion*.
- *Seven Days That Divide the World: The Beginning According to Genesis and Science* (Zondervan, 2011). My take on how the early chapters of Genesis relate to the evidence for the origins of the universe, the earth and humankind.
- *God and Stephen Hawking: Whose Design Is It Anyway?* (Lion, 2011). A critique of Hawking's views on cosmological origins.
- *Gunning for God: A Critique of the New Atheism* (Lion, 2011). A review and rebuttal of the arguments advanced by leading atheists against theism.

OTHER BOOKS

- Richard Dawkins, *The God Delusion* (Black Swan, 2006). Dawkins' passionate but flawed argument for atheism.
- Christopher Hitchens, *God Is Not Great: How Religion Poisons Everything* (Atlantic Books, 2008). I publicly debated Christopher Hitchens twice, and, although disagreeing with his viewpoint completely, found him to be a thoughtful and careful thinker.
- Ronald L. Numbers, *Galileo Goes to Jail and Other Myths about Science and Religion* (Harvard University Press, 2010). Leading atheist, agnostic and Christian scholars get together to dispel the stale myths that fuel the common misconception that science and religion are at war with each other.

- Peter Harrison, *The Territories of Science and Religion* (University of Chicago Press, 2015). A fascinating reassessment of the categories of science and religion, and our misunderstanding of both.
- C.S. Lewis, *Mere Christianity* (Collins, 2012). The language may be a little dated, but this little book still packs a powerful punch, and has changed the perceptions of many people about God.
- Marcus Nodder, *City Lives: True Stories of Changed Lives from the Workplace* (10 Publishing, 2018). This book dispels the notion that faith in God is for the weak or intellectually inferior. It has numerous stories of people from all walks of life who have come to faith in Christ.
- *The Bible.* I am always surprised at how many people have never read one of the gospels as an adult—Matthew, Mark, Luke and John—the four biographies of Jesus found in the New Testament. Time spent reading these eye-witness accounts, and thinking about the teaching of Jesus will never be wasted.
- Lee Strobel, *The Case for Christ: A Journalist's Personal Investigation of the Evidence for Jesus* (Zondervan, 2016). Strobel started his investigation as an atheist interviewing dozens of experts from all disciplines and walks of life.

THANKS

Heartfelt thanks to Tim Thornborough of The Good Book Company for encouraging me to write this book in the first place, for many useful insights, and for standing by me when I despaired of ever getting it into shape.

[1] *New Scientist*, Issue 2578, 18 November 2006.

[2] I did not know it at the time but, oddly enough, Bergson, who was Jewish, in later years moved towards orthodox views of God, and, in his will of 1937, he confessed that he would have converted to Christianity had it not been for the increasing wave of antisemitism in Europe.

[3] According to *100 Years of Nobel Prizes* (2005) by Baruch Aba Shalev, a review of Nobel Prizes awarded between 1901 and 2000, 65.4% of Nobel Prize Laureates, have identified Christianity in its various forms as their religious preference (423 prizes). Overall, Christians have won a total of 78.3% of all the Nobel Prizes in Peace, 72.5% in Chemistry, 65.3% in Physics, 62% in Medicine, 54% in Economics and 49.5% of all Literature awards.

[4] Sean Carroll, *The Big Picture* (Penguin Random House, 2016), p 3-5.

[5] Quoted at goo.gl/uPDpNC (accessed 1 August 2018).

[6] C.S. Lewis, *Miracles* (Simon and Schuster, 1996), p 140.

[7] C.A. Russell, "The Conflict Metaphor and Its Social Origins", *Science and Christian Belief*, 1 (1989), p 3-26.

[8] S. Hawking and L. Mlodinow, *The Grand Design* (Bantam Books, 2010), p 5.

[9] The *Guardian*, Wednesday 6th April 2011.

[10] "Why" questions connected with function, as distinct from "why" questions associated with purpose, are usually regarded as within the domain of science.

[11] Sir Peter Medawar, *Advice to a Young Scientist* (Harper and Row, 1979), p 31.

[12] Andrew Sims, *Is Faith Delusion?* (Continuum Books, 2009), p xi.

[13] *Gott: Eine kleine Geschichte des Groessten* (München, Pattloch, 2007).

[14] See the New York Review of Books goo.gl/yNb94X (accessed 28 July 2018).

[15] goo.gl/b9yfjY (accessed 23 October 2018).

[16] *Tractatus Logico-Philosophicus* (Kegan Paul, Trench, Tubner and Co, 1922), p 87.

[17] *The Meaning of it all* (Penguin, 2007), p 23.

[18] Einstein's reply to a schoolgirl's letter in 1936 which asked him, "Do scientists pray?" In the same letter Einstein also said, "Every one who is seriously involved in the pursuit of science becomes convinced that a spirit is manifest in the laws of the Universe—a spirit vastly superior to that of man,

and one in the face of which we with our modest powers must feel humble". goo.gl/m9Shk2 (accessed 25 July 2018).

[19] Dorothy Sayers, "The Lost Tools of Learning" in Ryan N.S. Topping (ed), *Renewing the Mind* (Catholic University of America Press, 2015), p 230.

[20] Stephen Hawking and Leonard Mlodinow, *The Grand Design* (Bantam Press, 2010), p 180.

[21] Stephen Hawking, *A Brief History of Time* (Bantam Press, 1988), p 174.

[22] I am well aware that chaotic considerations (sensitivity to initial conditions) make this prediction practically impossible for all but the first few ricochets of the ball.

[23] See Clive Cookson, "Scientists who glimpsed God", *Financial Times*, April 29, 1995, p 50.

[24] C.S. Lewis, *Miracles* (Fontana, 1974), p 63.

[25] *New York Times*, 12 March 1991, p B9.

[26] Richard Dawkins, *The God Delusion* (Black Swan, 2006), p 51.

[27] See R. Bauckham, *Jesus and the Eyewitnesses* (Eerdmans, 2017).

[28] Templeton Prize Address, 1995, goo.gl/bXag3s (accessed 11 July 2018).

[29] www.nature.com/articles/146605a0.pdf (accessed 23 October 2018).

[30] J. Polkinghorne, *Reason and Reality* (SPCK, 1991), p 76.

[31] *Communications in Pure and Applied Mathematics*, vol. 13, No. 1, February 1960 (John Wiley & Sons).

[32] Letter to William Graham, 3rd July 1881. The University of Cambridge Darwin Correspondence project, goo.gl/Jfyu9Q (accessed 28th June 2018).

[33] *One World: The Interaction of Science and Theology* (SPCK, 1986), p 92.

[34] *Straw Dogs* (Granta Books, 2002), p 26.

[35] Thomas Nagel, *Mind and Cosmos* (OUP, 2012), p 14.

[36] C.S. Lewis, *Miracles* (Touchstone, 1996), p 23.

[37] Armand Marie Leroi, *The Lagoon—How Aristotle Invented Science* (London, Bloomsbury, 2014).

[38] 1 Samuel 6 v 12.

[39] Antony Flew, *There is a God* (Harper Collins, New York, 2007), p 123.

[40] See *God's Undertaker* (Lion, 2009), p 34.

[41] *New York Review of Books*, 9 January, 1997.

[42] By the way, just for the record, I would never write something like that because it would be false!

[43] 1 Peter 3 v 15.

[44] Francis Bacon, *The Advancement of Learning.* goo.gl/svchM1 (accessed 26 July 2018).

[45] Often referred to as the Ptolemaic system.

[46] *Science and Religion* (Cambridge, University Press, 1991), p 96.

[47] John Calvin, *Commentary on the Book of Psalms Vol. IV* (Grand Rapids, Eerdmans, 1949), p 6-7.

[48] Deuteronomy 31 v 20.

[49] According to Hebrew scholar C. John Collins, *Genesis 1–4* (P&R publishing, 2012), p 51.

[50] If you are interested in reading my understanding of the early chapters of Genesis please see my *Seven Days That Divide the World.*

[51] *The God Delusion* (Black Swan, 2006), p 187.

[52] *The Language of God* (Simon & Schuster UK, 2007), p 51-52.

[53] Acts 1 v 22.

[54] 1 Corinthians 15 v 14 (NIV).

[55] *Suffering Life's Pain: Facing the Problems of Moral and Natural Evil* (Myrtlefield House, 2018).

[56] "Sources and Methods" in *The Cambridge Companion to Jesus* (Cambridge University Press, 2001), p 124.

[57] J. and S. McDowell, *Evidence That Demands a Verdict* (Harper Collins, 2017), p 55-60.

[58] *Our Bible and the Ancient Manuscripts* (Harper, 1958), p 55.

[59] A.N. Sherwin-White, *Roman Society and Roman Law in the New Testament* (Clarendon Press, 1963), p 189. For a more recent classical scholar making similar points, see Mark D. Smith, *The Last*

Days of Jesus (Lutterworth, 2017).

[60] There are many sources relating to Jesus, including the four first-century accounts, the numerous letters from Paul, and the work of Josephus, who describes many of the people and events of the time. For more information about textual issues, see the discussion in R. Stewart (ed.), *The Reliability of the New Testament* (Fortress, 2007). For a discussion on the importance of oral tradition, see R. Bauckham, *Jesus and the Eyewitnesses*; and D. Wenham, *Did St Paul Get Jesus Right?* (Lion, 2010).

[61] Although scholars believe that his account may have been subsequently embellished, the general consensus is that the original contained an authentic reference to Jesus' execution.

[62] Prior to this, the accounts of Jesus would have been passed on through oral tradition, which was the main way in which important ideas were preserved and communicated in preliterate societies.

[63] John 20 v 3-8.

[64] See John 20 v15.

[65] *Jesus: An Historian's Review of the Gospels* (Charles Schribner & Sons, 1977), p 176.

[66] Acts 1 v 3.

[67] *What Really Happened to Jesus? A Historical Approach to the Resurrection*, John Bowden, trans. (Westminster John Knox, 1995), p 80.

[68] *Reasonable Faith* (Crossway, 2008), p 394.

[69] Acts 7 v 56.

[70] 1 Corinthians 15 v 8.

[71] 1 Corinthians 15 v 6.

[72] W.A. Dembski and M.R. Licona, *The Evidence for God* (Baker, 2010), p 178.

[73] The earliest New Testament documents speak of a risen Lord.

[74] *The Phenomenon of the New Testament* (SCM Press, 1967), p 3, 13.

[75] John Lennox, *Gunning for God* (Lion, 2011).

[76] The original version of this illustration I owe to my long-time friend, mentor and colleague, Professor David Gooding MRIA.

[77] I recommend the book *City Lives: True Stories of Changed Lives from the Workplace* by Marcus Nodder (10 Publishing, 2018). It tells the stories of numerous men and women who have

found faith in Christ.

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